

AMERICAN FORESTS



DECEMBER 1938

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**COMING**

In keeping with the ever-changing scheme of things in the reading as well as publishing field, the January issue of **AMERICAN FORESTS** will appear with a new cover and several new features. While not radically changed in design, the cover, it is believed, will have greater appeal to the reading public and thus enable **AMERICAN FORESTS** better to serve the cause of conservation.

Among the new features will be a department devoted to the care of trees and shrubs around the home—a real service to the home and estate owner. This feature should serve as a monthly guide to tree-loving home-owners.

Articles for January will feature Roy L. Peppenburg's revealing account of the opportunity for the development of tung oil forests in America as a result of the war in China. The progress of community forests will be told by Nelson C. Brown, while James Stevens' summary of the logging situation on the Pacific Coast is enlightening.

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CONTENTS

VOLUME 44

December, 1938

NUMBER 12

AMERICAN FORESTS

Page

- 530 READER'S FORUM
533 EDITOR'S LOG
534 THE HAND
Poem by Archibald Rutledge
535 GOD'S GLEANERS
By Archibald Rutledge
540 EVERGREENS
By Grif Alexander
542 DESERT CHRISTMAS TREES
By A. Dell Roensch
545 ARE THE ELMS BEING SAVED?
By William P. Wharton
548 THE STORY OF MISTLETOE
By Genevieve Monsch
552 CALL OF THE WILDERNESS
By Mary W. Ruffner
558 REAPING WHAT THE WINDS HAVE SOWN
By R. F. Hammatt
563 EDITORIAL
Christmas Trees and Conservation
566 AROUND THE STATES
570 ASK THE FORESTER
571 BOOK REVIEWS
576 "WHO'S WHO" AMONG THE AUTHORS



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Member A. B. C.

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- Adequate Forest Fire Protection by federal, state and other agencies.
- Reforestation of Denuded Lands valuable for timber, wildlife, protection of streams.
- Protection of Fish and Game and other wildlife under sound game laws.
- Prevention of Soil Erosion
- Preservation of Wilderness for Recreation
- Establishment of State and National Forests and Parks
- Development of Forestry Practices by the forest industries.
- Education of the Public, especially children, in respect to conservation of America's natural resources.
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READERS' FORUM

ON THE GINKGO TREE

SIR: I want to say a word about the ginkgo leaf so artistically attached to a letter recently received from the Association. My wife laughed when she opened the letter and said, "This is surely the irony of fate that anyone should send us a ginkgo leaf." You see, we have two enormous ginkgo trees in our yard. First, they have to be trimmed back to keep the branches from scraping all the stucco plastering off the house. Then, in the autumn, we are deluged with leaves and have to have a man remove bushel baskets of them. They cover the flower beds like a rubber blanket and make the bulbs sprout long before their time. They will not burn and have to be raked off and carried away. One thing your interesting account of the ginkgo failed to describe is the crop of yellow plums that fall after the leaves. They get trampled by the hundreds on the walks and the resultant odor is terrific. I should like to send you a quart of them in return for your ginkgo leaf. They also have to be gathered up in baskets and removed!

In spite of all this, however, we do not wish to lose our pair of ginkgos and all hail to the Buddhist monks to whom we are indebted for them. I wonder if they learned to eat the plums?—*Witmer Stone*, Philadelphia, Pennsylvania.

STREET TREES GET A HEARING

SIR: Richmond, Virginia, is very proud of its trees. We have, by the way, what is claimed to be the longest avenue of linden trees in the country, if not the world. Not long ago the Department of Public Works cut down twenty-three trees on a business street at the request of merchants who claimed they hid their displays and electric signs.

Such a city-wide furor arose that the director of Public Works said "Never again!" So now, excepting in cases where removal of a tree is required as a safety measure, the director, when the removal of trees is requested, placards each tree with an announcement of the removal request and invites citizens who object to appear at a public hearing and present their arguments why the trees should be preserved. Might be a good plan for other cities to follow:—*John Riis*, Richmond, Virginia.

A CCC FIRE-FIGHTER SPEAKS OUT

SIR: In your September issue was an article called "Red Warfare on the Western Front," written by George E. Griffith, and pertaining to late summer forest fires in the West, their causes, damage done, and means of their prevention.

Our CCC camp fought ten of these fires. We put in 4,146 man-days, or a total of 33,168 man-hours.

It is all in a day's work to go to bed at ten o'clock; only to be routed out again at two in the morning, eat a hasty breakfast, then ride over roads so dusty that you have to wear a wet handkerchief over your nose in order to breathe. After traveling up to 100 miles under such conditions, you work sometimes as long as twenty hours a day, half of the time with little or no water for long periods at a time.

The point which Mr. Griffith brought up about cigarette smokers and campfires cannot be stressed enough in order to enlighten the people of this country on the causes of forest fires. The amount of hard labor and untold damage is a terrific penalty to pay for a carelessly thrown cigarette stub or a smoldering campfire. Mr. Griffith or any other authority will find fire fighting CCC camps ready to back him to the limit on anything they say in their, and our, drive to prevent forest fires.—*Theodore B. Traphagen*.

ENDURING BLACK CHERRY

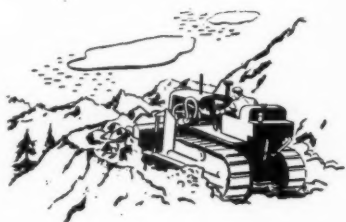
SIR: The copy of "Knowing Your Trees" reached us last night and we are more than pleased with it.

In looking over the book and the pages on black cherry, I find no special comment on the long life of a log when used as a post. In our Berkshire Hills, when an enduring post is wanted, maple and ash are discarded and black cherry sought. In fact, a farmer who works our sugar orchard said that for the last ten years he has been forced to drive around a big black cherry log, apparently now as sound as when it fell. Thinking this bit of country lore might be of interest, I am passing it on.—*Mrs. Louis C. Smith*, Newton Centre, Massachusetts.

CONGRESS SHOULD DO ITS DUTY

SIR: Your editorial in a recent number—First Things First—is very timely. Can't get more money this year, of course, but I feel we should keep after Congress to do its duty. There's no sense in planting new forests if they're not going to be protected adequately; and there is no rhyme or reason in the government demanding better forestry on privately owned lands and not doing its share in defending this forestry against the fires of the public which the government is encouraging into going into the woods for more recreation. The real reason for the apathy on the part of Congress is the lack of political value to forest protection; and the fact that the United States Forest Service puts in most of its effort for its own needs. — *Emanuel Fritz*, Berkeley, California.

AMERICAN FORESTS



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HON. ROBERT P. BASS
President, The American Forestry
Association, 1911-1913

■ Hon. Robert Perkins Bass, Governor of New Hampshire, was elected by the Directors as twelfth President of the Association on August 3, 1911, to succeed Governor Curtis Guild, Jr., who retired in the middle of his third term to go to Russia, to which country he had been appointed as Ambassador by President Taft. Governor Bass was no tyro in forestry, for he had worked at its problems on his own broad acres and as president of the New Hampshire Forestry Commission. He served in the State Legislature for several years and in 1910 was elected Governor. While he was still in the State Senate, and due entirely to his initiative, a state forestry law was enacted providing for forest fire protection in New Hampshire. So complete was this

OUR PRESIDENTS

statute that during the ensuing quarter of a century no fundamental changes in it were necessary. He has been an active member and director of the Society for the Protection of New Hampshire Forests for over twenty-five years. Governor Bass' administration marked one of the most progressive epochs in the history of New Hampshire. He developed the work of the Forestry Department of the State, stimulating efficiency and service.

During Governor Bass' presidency, in 1911 and 1912, the Association pushed steadily forward, extending its influence as an educational medium all over the country and cooperating in the development of forestry activities in the states. Its membership was slowly but steadily building—strengthening its arm in national campaigns and making it more influential. The long-fought battle for the Weeks Bill was finally won, and in this the Association had been constantly on the front line, as it had consistently stood for national forests in the East for many years. In these years, too, the scope of the magazine was broadened, less technical material being used and a more popular tone adopted, in order to appeal to a wider reading public.

Governor Bass was born in Chicago, Illinois, September 1, 1873. When seven years old he came to New Hampshire, making his home at Peterborough, where he still lives in the home of his maternal ancestors dating back before the Revolutionary War. He was graduated from Harvard and the Harvard Law School, taking his master's degree at Dartmouth.

Of him, Theodore Roosevelt said: "Robert Perkins Bass is the leading exponent to be found in the entire Northeast in the battle for the cause of social and industrial justice."

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THE EDITOR'S LOG

MR. ROENSCH'S article, in this number of *AMERICAN FORESTS*, presents some interesting and unique claimants for the title of Christmas tree. Peoples of the North accustomed always to a wide range of verdant evergreens will question, no doubt, if a thorny cactus is entitled to that honor. Being provincial and argumentative as human nature is wont to be, they may call upon Noah Webster to support their negative contentions because Webster quite plainly defines a Christmas tree as "a small evergreen tree, set up *indoors*, decorated with ornaments, bearing gifts."

But is Webster right? If so, the millions of evergreens growing *outdoors* in yards and in community centers which our generation is decorating with lights and ornaments and sweetening with gifts every Christmas Eve are not Christmas trees. And this doesn't make sense; nor does it make sense to say that a tree must be an evergreen in order to wear the crown of Christmas tree purity.

The species or family to which a tree belongs or the raiment with which nature has endowed it, surely in the deeper sense does not make a Christmas tree. I prefer to think it is the things that trees symbolize. Students of history have gone far back into the dim past searching unsuccessfully for the origin of the Christmas tree and why or when it came to symbolize the Christmas spirit. None of them, it would seem, have gone back far enough—back to the beginning of life as recorded in the Bible. In Genesis, it is written: "And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of knowledge of good and evil." And later in the same Book: "Behold, I have given you every herb bearing seed which is upon the face of all the earth, and every tree in the earth which is the fruit of a tree yielding seed; to you it shall be for meat."

Beauty for man's soul, food for his body, seed symbolic of perpetual life and service! Are these not the things that have given the tree, be it conifer or cactus, its rightful place in our Christmas rites?

* * * * *

A conservation folder issued by the Department of Forestry of Mexico contains this old Arabian proverb. "He who has not planted a tree, written a book, or had a child, has not fulfilled his mission on earth."

* * * * *

Evil days seem to have fallen with a vengeance upon the American elm. Victim of the deadly Dutch elm disease, battered and broken by the New England hurricane in the land of its greatest fame, it now is threatened by a new disease, discovered in Ohio where it has killed a thousand elms in one city alone. Hitherto unknown and unnamed, the disease, according to Roger U. Swingle, of the United States Department of Agriculture, is spreading rapidly among the elms in Ohio.

The disease is extremely virulent. Observation indicates that trees once infected do not recover. The foliage begins to thin, the leaves to droop, turn yellow and then to fall from the limbs. Death follows in from three to thirty-six months.

Whence came the disease, just what it is, and how it is transmitted under natural field conditions are baffling pathologists. Studies thus far made have failed to reveal any associated organism. Dr. Swingle believes the disease is of a virus nature and is systemic.

The above would seem to be enough trouble for one tree—but there is more. No funds are available for further study of the disease and of methods of dealing with it, so that unless the Federal and State Governments come promptly to the rescue, as they should do, this mysterious disease may undo the efforts to save the elm on other fronts.

Orin Foster
Editor.



Courtesy The Metropolitan Museum of Art

THE HAND OF GOD

By August Rodin

THE HAND

By ARCHIBALD RUTLEDGE

Though I cannot understand,
Yet I trust and I believe
From the same Almighty Hand
All the stars their law receive,
Giving sun and moon their rounds,
And the flaming comet, bounds.
Where the ponderous planets roll
Is the same divine control
As I feel within my soul.
To that dim resistless wand
Multitudinous worlds respond;
And the love that sways Arcturus
And the mightier stars beyond
Makes the shore the wild sea's yoke,
From the acorn rears the oak.
Lifts the wildflower's fragile grace,
Holds the thunder in his place,
Moors the darkly massive mountain
To his granite-tenoned base. . . .
And the Master over these
For my heart a mandate holds
As for burning Betelguese.
All the ancient music golden,
All the august silence olden
Of the far primeval rhythm
In deep harmony's upholden
By the Will that never alters,
By the Hand that never falters.



Devereux Butcher

Consider the gleaners of God—abroad in the cypress swamp at night, where they may still find sanctuary

GOD'S GLEANERS

By

ARCHIBALD RUTLEDGE

HAVING been told by a friend of mine, who is a timber estimator, that he had seen a flock of at least twenty-five wild turkeys in that primeval wilderness known as Mound Ridge, which lies at the extreme northwestern end of the mighty Santee Delta in South Carolina, I determined to visit the swamp in the hope of having sight of the great birds,—for of all the feathered wild things of North America, none is comparable in majesty to this king of the elder world. Vanished from most of his former haunts, he is now rarely seen anywhere. But on the Delta he is still holding his own.

Paddling in my cypress canoe in the starlight of the mild and silent winter night, I landed on Mound Ridge about a half-hour before daybreak. And what a place to land! I was more than three miles from home, and my house is the nearest human habitation. Somehow I got through the dense canebrakes and the smothering greenery of the gross island thickets, and came out ere long upon the open ridge, where grow giant cypresses, oaks, and hickories.

Sitting down on an old log, I waited for day to break; and, indeed, before the light came, there were evidences

that the night had passed. I heard subdued rustlings, faint and guarded footsteps, showing that the prowlers of the darkness were retiring. Then came bird-notes: the first I heard was a phoebe, startling the huge and thoughtful stillness of that mouldering wilderness with its sweet and plaintive call. Owls gave their last weird and derisive whoops. As day broke, all pink and pearly against the mighty forms of the sleeping trees, cardinals called, robins awakened to song, and two Carolina wrens called to each other in tones that lovers might do well to learn. But my particular quest was for the grandest member of all that wild brotherhood. Nor was I to be disappointed.

Flushing the whole world with a tender radiance, beautiful and serene came the blessed daylight. And, seventy feet from the ground, in a monstrous water oak a hundred yards up the bank of Flag Creek, close to a great banner of Spanish moss, I saw, bulking black against the roseate sky, a great wild gobbler. Here was a scene that made me think of earliest America; for here nothing ever seems to change. Here rolls forever one of the mightiest of American rivers; here is a wilderness alone



© William J. Jaycock

A Greater Yellowlegs feeding—these gleaners of God search field and forest, water, sky and shore for what a merciful Providence provides for them

and unspoiled; and here the finest of all our native game birds still has sanctuary. This was a scene upon which Columbus might have looked, or Captain John Smith, had they sailed up the Santee. For the preservation of a land like this the noble Osceola fought. Audubon, Alexander Wilson, William Bartram—they saw scenes like these. But few people realize that they are still to be enjoyed.

While waiting for better light to reveal further wonder, it suddenly occurred to me that I was hungry; and half-guiltily I felt my coat pocket for the lunch that had so carefully been prepared for me. I could not find it. With growing alarm I hunted in every pocket. Then, remembering just how that neat package of sandwiches had looked by lamplight on the table at home, and failing to recall that I had put it in my pocket, I was forced to the melancholy conclusion that I had forgotten the precious parcel. Here I was in the swamp for the whole day, with nothing to eat. Now, you may well be pardoned if you express wonder at my thus

digressing. But it was my forgetting my lunch that afforded me the idea to write about God's gleaners. You shall soon see what I mean.

With an effulgence momentarily brightening, over the wild marshlands, through and over the stupendous and but lately darksome swamp, the sun rose in a cloudless sky. No sooner had his first beams touched the glimmering crest of the great water oak where the wild gobbler was roosting than he stood up on his perch, ruffled his dew-damp feathers, peered with eagle eyes over the awakening world that he knew and loved so well, and forthwith launched himself earthward. To me there is no more impressive sight in all nature than a wild gobbler on the wing; and when he has for a background such a primeval setting as this one had, to his beauty and his power and massive grace are added all those suggestions of the ancient and unchanging beauty of nature that the wilderness naturally affords. His flight took him steadily downward, and I heard him alight heavily in a desolate field of white marsh. A few minutes later I had lured



The haunt of the beautiful Wood Duck—he prefers water-acorns to anything else, though he also loves the fruit of the gum, and the seeds of waterlily and lotus

him with my call, and with fascinated interest watched him glistening in the early morning sunlight not more than thirty feet from me.

But the thought that kept coming to me, even while I was thrilled by the proximity of his majesty, was this: I leave home, forgetting my lunch; this superb wild bird leaves his roost, looking for breakfast. No wild creature ever plants anything. He merely searches for what he

wonder how certain people live. I know plantation negroes who never see what they call "cash money" from one year's end to another. But they manage. They subsist. And they get much happiness out of life. More remarkable is the manner in which wild children of the forest and field find their sustenance. But perhaps it is not so remarkable; for they receive it from the Hand Divine. We, too, receive ours in the selfsame way, in the



The Wild Turkey—grandest gleaner of the feathered wild brotherhood,—has no trouble discovering what to eat and where to find it in the heart of the wilderness

Allan D. Cruikshank

needs to sustain life. This gobbler, coming down from his high roosting-place, would have no trouble discovering what to eat and where to find it. In the matter of what we might call their livelihood, the children of nature are the gleaners of God. The empire of the earth is their harvest field.

Samuel Johnson once said that if a man loses interest in his dinner, he is likely to lose interest in everything. All of us, I take it, are naturally interested in the subject of food; and as we love wild creatures, we ought to be interested in theirs as well. We sometimes say that we

sense that the Creator gives us the intelligence to grow our crops for the maintenance of our physical well being.

What would that old wild gobbler find in the desolate swamp to keep him in perfect physical condition — a condition that would put to the blush that of many an Olympic champion? Well, he loves acorns, and in the swamp grow countless white oaks, black oaks and water oaks. There are no live oaks there, but he has his wings; and by flying across the river, he can forage upon the small sweet black acorns of that tree. He eats the berries of the gallberry, the sparkleberry, the big hard seeds

of the American lotus. When the scarlet dogwood berries fall on the bronzed leaves, which lie on the floor of the Ridge with centuries of leaves beneath them, his banquet is spread for him. He relishes wild rice, the tender shoots of marsh and of wampee, the fallen berries of the black gum. I have seen a wild turkey strip the seed from foxtail grass. On mighty Mound Ridge there are certain patriarch yellow pines. The mast of these trees is food for this noble bird. If he happens to range out of the wilderness and into a farmer's domain, he avidly enjoys corn, peas, rice, peanuts, wheat, barley, buckwheat and oats.

His diet changes rapidly with the seasons. In the winter he feeds from nature's granary and storehouse; in the spring and summer he subsists almost entirely upon berries, green shoots and insects. A very valuable insectivorous bird, the turkey destroys multitudes of spiders, wasps, beetles, small snakes, mice and lizards. But the scientific data concerning his food is not so interesting; it is rather how he finds it, and how he knows what is good. Occasionally wild turkeys will suffer famine. On this same Ridge, years ago, in the time of a great flood, I found a whole flock in the tops of the tallest trees of the swamp. They had been there about eight days. All their natural food had been submerged. When I came on them, they did not seem to be in distress. Delicately, and somewhat teeteringly, as their heavy bodies swayed on the smaller limbs, they were feeding on the tree buds. With their dinner table eighteen feet under murky water, they managed. I seem to find a lesson for all of us in that.

It is far from my purpose to set out to tell you what every living bird and animal eats. In the first place, I don't know. But I have studied the food habits of some of them with especial care; and we may judge from these how the others live. But the deeper implication is my real theme, a theme beautifully and universally stated long ago: "Consider the lilies of the field. They toil not, neither do they spin."

I like that word "consider". It needs, I think, to be poetically interpreted. Does it not mean "meditate upon, dream about, realize who sustains them"? In the same way I love to consider the children of the wild and their quaint housekeeping. For all its random nature, there still exists in it the beauty of a perfect confidence that, come what may, God will provide. This idea helps me to understand why trees and shrubs invariably bear hundreds of more times the amount of seed-carrying fruit than would be necessary for their own propagation. Is not the implication that the Creator is also the almighty Provider?

One day during the first week in November, a time when my plantation woods are aglow with all their autumnal glory, I was in the wild shrubberies a mile from the house. Tired from a long walk, I sat down on a log to rest. It is extraordinary what a change comes over the woods when one stops walking and becomes motionless and silent. For then the wild creatures, reassured by the stillness, come forth; and as a rule the business they will be about is joyously gleaning from the Creator's boundless plantation of the world.

Only a few yards from me, in the evergreen shade of oaks and pines, a dogwood tree beautifully rose. This tree was loaded with its brilliant scarlet berries; and it was evidently a favorite rendezvous for the birds of that neighborhood. First two hermit thrushes came to dinner. These were then joined by a whole family of flickers, five of them. A brown thrasher and a cardinal added their presence to the variety and number of the banqueters. Then a flock of about twenty robins, trilling

as they ate, made gay the tree with their ruddy breasts. A fox sparrow, beautiful in russet and black, joined the innocent revelers. Last, and much to my surprise, with a great beating of wings, a big pileated woodpecker, his plumage all scarlet and white and ebony, alighted awkwardly on a small limb and went to work in real earnest.

All these birds I saw feeding in one tree at one time. Perhaps here is a lesson for us to heed. I take it that all of us love birds, and love to have them about. They come where feed is to be found. And the berry of the dogwood is the favorite food of many of our most beautiful and interesting birds. I should say that more dogwoods ought to be planted where they will have a fair chance to come to their wonderful loveliness; for this is one of the few trees that is beautiful at all seasons. If you object by saying that it is bare in the winter, yet see how green the buds are, and how living are the slender limbs and twigs. In the dead of winter it offers us the radiant promise of spring.

Familiar for nearly fifty years with the wild whitetail deer, I have carefully considered his feeding habits. Wherever he is hunted he never feeds by daylight, unless it be in the twilight of the evening and in the twilight of the morning. All day he drowzes in some remote haunt. But when the sun sets, he steals forth, with a quietness and a shadowy avoidance almost incredible in so large an animal, silently to roam the dim country of the night. Deer will eat avidly anything that a goat, a sheep, a horse, or a cow will eat. In certain regions he is very destructive to growing crops, and even to ripe grain that has not been harvested. Deer eat acorns, chestnuts, pine-mast, beech-nuts, blackberries and huckleberries. But as a rule most of their food consists of tender leaves, buds and grasses.

In the winter, one of the standard foods of the wild deer is the mushroom. In my pine woods the pinestraw lies very thick, sometimes four or five inches, the accumulation of years. Under this damp blanket myriads of mushrooms grow; but rarely is one able to push its way through so dense a matting. At night a deer, traveling with his nose to the ground, will detect the presence of a mushroom by its smell, and will nuzzle into the straw until he finds his prize and crops it off. In my woods it is no uncommon thing to see hundreds of these holes in the wet pinestraw; and at the bottom of each one will be the root of a mushroom. I know that this is the work of deer, for I have watched them thus feeding in the moonlight.

When once deer have located food that they enjoy, they will travel many miles in the darkness to procure it; and they often use considerable ingenuity in getting it. A friend of mine, the manager of a great game preserve, told me that he had planted a ten-acre field in black-eyed peas. As he knew the deer would eat all the green tops, he had a special fence put up, nine feet high. Yet every night a large herd of deer entered the field and banqueted on the lush foliage of the peas. Determined to discover how they entered, he sat up in a tree one moonlight night, and found that the deer came in by entering a shallow ditch that ran under the fence-wire. They went out by the same route.

It sometimes happens that there is one kind of food that one wild thing only will eat; or at least such appears to be the case. The scarlet seeds of the great magnolia grandiflora I have never seen eaten by any animal; and by one bird only, the warbling vireo. Since boyhood days, under the glossy and rustling shade of these superb trees, I have watched this little bird at his favorite repast; I never saw another bird feeding there. As far as I know, the wild (Continuing on page 573)



© Hobart V. Roberts

The gentle doe steals forth in the shadowy night
to glean on tender leaves, buds and sweet grasses

EVERGREENS

By GRIF ALEXANDER



WINTER arrives with the leaves of deciduous trees on the ground. Wrinkled and brown, they are swept by the truculent wind here and there. Huddled in corners, they whisper dead secrets of days that are past; summertime glories; the birth of the flowers and the fruit; visits of bees and of butterflies; motherly birds in their nests; fullness of life, and the promise of heaven that stirs in the dust.

Then comes the snow and it covers the earth with a crystalline sheet. Dry leaves grow moist and disintegrate slowly and merge with the soil, giving their strength to the seedlets that sleepily dream of the Spring.

Underground work! But above them has greenness and verdancy passed? No; for the evergreens, holly and mistletoe, cedars and pines, all of the conifers, forming an abatis, flouting the cold, vibrant with cheerfulness, shine in their exquisite delicate dresses and ward off the dreariness winter surrounds us with; lighten our hearts. Avian storehouses, blithely ubiquitous, they are a link between Autumn and Spring.

Bare trees have beauty. Their lines have a gracefulness etched on the sky. Winter's reality, tintured with hopefulness, frostily smiles. Every brown bough stretches out with a promise of largesse to come. Nature, the

prodigal, borrows our cheerfulness, borrows our hopes, then as security offers the evergreens, all good as bonds. There's a red cedar I love that effectively tells the whole tale. All through the seasons it pleases with beauty and helps with good works. Leafy, umbrageous, its shade through the summer gives comfort and cool; and in the winter its fruit feeds the red birds, the blackbirds, the snowbirds.

Think what that means when the locust and walnut and oak trees are sere! Pin-oak and bur-oak and apple and pear trees denuded of leaves shock the wee feathered ones, leaving them desolate, leaving them sad. All of the fruit has been eaten already. Not even a grub stirs in the dank bark to give the birds sustenance, poor little things! Here's where *Juniperous Virginiana* smiles on the birds; gives them a welcome to fruit darkly purple and wholly delicious; wee little berries with bloom that is glaucous and tang that appeals.

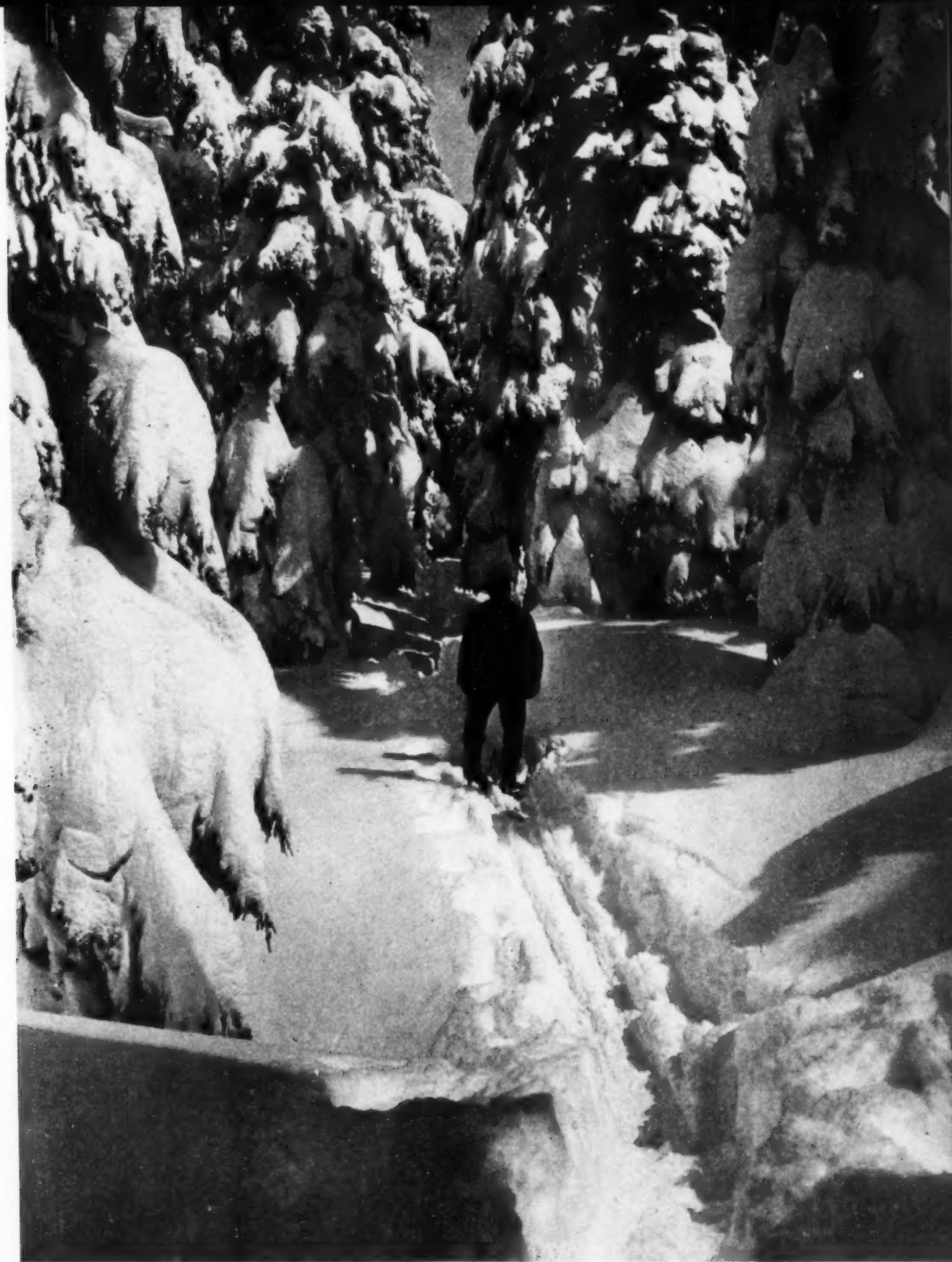
Picture the scene when the snow is enveloping meadow and copse: Wet, clinging snow that the branches find burdensome save when they're bare. There is your groundwork, the base of your drama, the scene of your play. Then come the actors employed by the Weather Man—sunshine and frost, who follow each other in wonderful solo work, magical stuff. Sun follows snow and arresting fridity melts it to tears. Frost follows sun, turning tears into icicles; diamonds, pearls, rubies and emeralds, a kaleidoscope worked by the team.

Ring up the curtain! The scene is magnificent! Dining room large lit by the bright iridescently glittering jewels aloft, pendant from branches that bend to a tablecloth startlingly white, a lovely white tablecloth, ready for banqueters, covered with food! Berries a-plenty! And diners a-plenty, too; cardinals proud and garrulous, grackles that all too persistently vie for the fruit. Life is a gamble. Well, what do you bet on, the red or the black? Well, never mind. They are feeding with diligence. That's all that counts.

When the snow passes the evergreens blithely anticipate Spring; trees, shrubs and vines know a rejuvenation that mimics the Spring. Laurel is fresh as a leaflet in



Photograph by Alma Higgins



Photograph by Irving B. Lincoln

April that's just met the dew. All the pine needles you press when you're walking assure with each step that all 'round about you are conifers modestly changing their clothes. Every wee abdicant knows its successor is right on the job. That's the outdoors; and a man from his infancy knows it and loves it; carries it home with him just to remind him of some of its beauty; flowers for the table in springtime and summer; leaves in the fall. What of the winter? Then, heigh-ho, the holly! The mistletoe bright! The brave running cedar! A sprig of the laurel! Alive, all alive.

And since in the winter a man lives on memories built in the past, all of his symbols grow mystical qualities, warding off ills. (*Continuing on page 576*)

DECEMBER, 1938



DESERT CHRISTMAS TREES

By A. DELL ROENSCH



SANTA CLAUS, who has the reputation of being the most broadminded individual in North America, annually must prove his broadness when he swings down to the arid Southwest. Accustomed to hanging gifts on such lush evergreens as holly and pine and fir, he receives a distinct shock when he gets to, say, southern Arizona.

And, once there, he may yell "OUCH!"

If so, it is because the Christmas tree on which he is hanging toys is a surprising fat thing with no branches or leaves but with a thick coating of thorns.

And it won't be inside by the fireplace; more likely it will be a hundred yards from the sleeping children, down by the horse corral.

It will be, probably, a saguaro, *Cereus giganteus*, member of the fantastic clan of cacti which add their seenie touches to an already bizarre region. Strange as it sounds, this giant cactus will be draped with colored tinsel, glass baubles, and lights, just as any fir tree in Michigan might be. It will be odd, but sacred and inspiring just the same; if genial old St. Nick can't keep his fingers off the thorns, that's his hard luck.

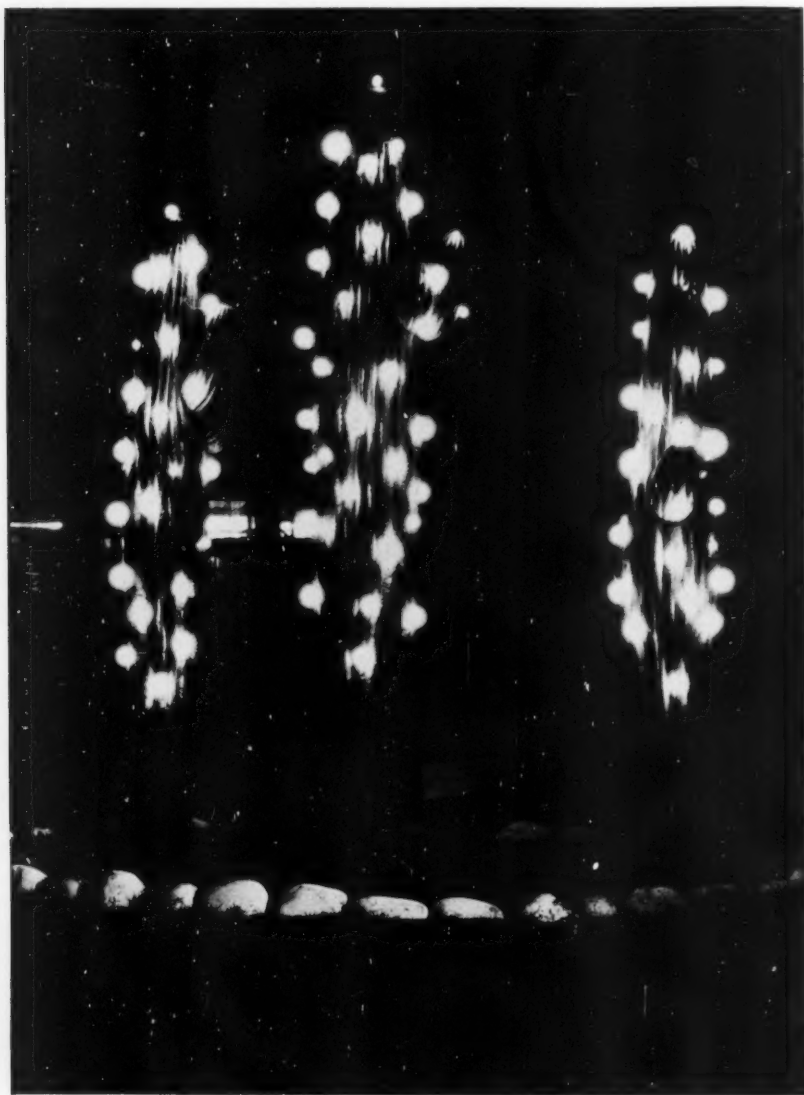
This tree, or its counterpart, will be the only tree many a desert child ever sees, often is the only kind of Christmas tree ever known.

Reason for this is the significant fact that very little rain falls along the Mexican-American frontier, and for two hundred miles or so northward. Some areas have as little as three to six inches, and even in the main desert cities of Phoenix and Tucson, eight inches is a "wet" year. Accordingly, pine and fir and holly are just things in the picture books.

This does not mean that the American desert is utterly barren of leafy things; nothing makes the desert folk more indignant—and rightfully so—than to have misinformed persons sympathize with them for electing to live on gleaming sand dunes, Sahara-like and sear. Their truthful answer is that the desert has forests of its own, and you can come to love the beautiful desert flora even more than the flora of damper zones. Nevertheless, many a vast rancho, often an entire county, will be without "trees" in the accepted sense.

The giant saguaro is by

Christmas night in Arizona, where the festive tree may be a cactus. These are saguaro, — beautifully lighted





Christmas joys are not to be denied this "cactus" baby

Below — Happy on Christmas morning with his gaily trimmed cactus tree—the only kind a desert child often knows

Right — Schoolgirls in the desert make the cactus to bloom on Christmas morning



Even the prickly pear goes festive when Christmas rolls around

no means the only desert specimen used at Yuletide. One of the unique Christmas trees is that contrived from the common prickly pear. This cactus grows up to twenty feet tall, and when properly draped assumes a definitely modernistic pose, or suggests even some kind of impressionistic sculpture.

The extremely dangerous cholla or jumping cactus is another good one on which to hang ornaments. It is so thick with thorns, which are so barbed and painful that they are said to jump at people, that great care must be used in decorating them. But this is all a part of the fun, and again St. Nick can take his own risks.

Miracles of beauty can be worked with the better shaped mesquite and ironwood, the thorns of which are not so vicious, and which do have lacy leaf patterns, in contrast to the caeti.

The highly ornamental century plant, and its inevitable neighbor, the yucca or Spanish dagger, can be tipped with colored lights in a front yard, and people will drive for miles to see them.

In a few instances domestic palm trees are decorated at Christmas time also. A palm, either ornamental or date bearing, is really a big grass—although they grow up to 100 feet tall—and its drooping fronds are to ungainly for best effect. Nevertheless, if it happens to be the only thing available when the urge comes, Southwesterners hang our pretties right there.

This custom of decorating "whatever is at hand" started a long time ago when the pioneer desert families had no choice.

It wasn't feasible then, and it often isn't now, to travel the hundred miles or so for a conifer, even though Arizona, for instance, does have rich pine and fir forests. And often our families cannot afford to buy imported trees. Nevertheless, the custom of decorating thorny growths did not see general acceptance until recently, when city folk who could afford anything began taking to the "Desert Christmas Tree" idea.

In Tucson and Phoenix, and in the desert towns of New Mexico and California, almost any growth today is likely to find itself bedecked in ribbons and tinsels and glass. Invariably the result is beautiful.

Many expensive desert estates, homes of eastern "dudes" who come to the Southwest for balmy winters, have old caeti growing right near them. Wherefore,

Jeems, the butler, is ordered to extend a string of electricity, while madam herself—assisted by her sons and daughters—goes out to decorate their unusual tree.

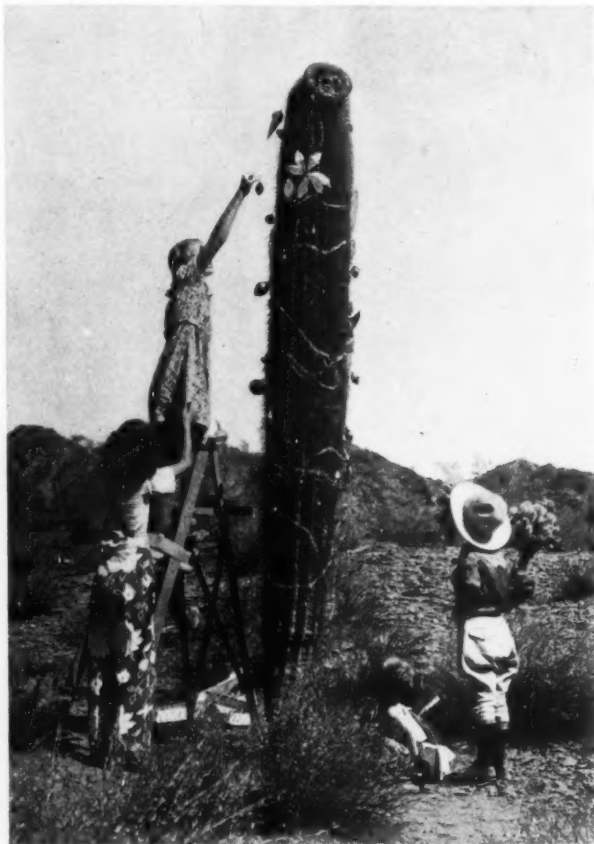
Nobody dares cut a cactus or other desert growth and bring it inside, with the possible exception of a small palo verde limb, to be covered with colored gumdrops all over its thorny ends, and used for a table ornament. It is a distinct *faux pas* in the Southwest to cut a wild shrub or tree. Besides being socially taboo, this is against the law, and the pressure from both directions is increasingly great. Conservation of desert flora is becoming more than just an ideal. But decorating the living trees is popular and does no harm.

Now the word "decorating" must be accepted broadly here.

I know of a few instances where, bless their hearts, the little desert children made the most of a pile of junk. With intuitive sense of fitness, they made their tree lovely, too. Golden-haired Marjorie, age nine, taught two younger ones to help her string mesquite bean pods and color them with wild berry juices. These she draped around her cactus tree. Brother Horace, age ten-going-on-eleven, punched hole patterns in old tin cans, hung them on the cactus with wires, put lighted candles in them at night. Colored balls were made from the comic section of a thrown away Sunday paper, wadded and tied. Crude, yes; but beauty being far more than just physical, I swear to you this was the most beautiful Christmas tree I ever expect to see.

But take the case of the hands on the old Cross S. Ranch. Those yahoos don't go in much for sentiment. They live by sweat and swearing, and the only fundamental things in life are steers and saddles and horses and manure and tobacco and boots. That is, until December 24 rolls around.

Then, if it is convenient, a few get drunk. But more of them have surges of memory, harking back to childhood and mother somewhere else. That's the condition under which the Cross S cowboys had their Christmas tree. They were unable to leave their drab little range camp on Christmas Eve, and they had to have some relaxation. So, when the next dawn came, a cactus near the front door was highly "decorated" with empty tin cans, broken dishes, tobacco sacks, paper bags, trash of all kinds. No, (Continuing on page 574)



Tackling a big one, these youngsters trim a saguaro—the largest and most forbidding near their home—in true Christmas style though under a blazing sun

ARE THE ELMS BEING SAVED?

By WILLIAM P. WHARTON

Chairman, National Conference on Dutch Elm Disease Eradication

THERE IS widespread concern that the campaign to eradicate the Dutch elm disease from this country is failing in its purpose. Skepticism of its success is becoming increasingly evident among those familiar with the methods by which eradication is being attempted.

The National Conference on Dutch Elm Disease Eradication, composed of citizens and civic groups active in promoting public action to save the American elm, believes a grave crisis has been reached. Its judgment is supported by Dr. J. H. Faull and Dr. J. C. Boyce, professors of forest pathology at Harvard and Yale Universities respectively, who have just completed a joint field study of the eradication campaign. "It is our belief" they declare, "that unless radical changes are made this coming year in the methods employed and in the system of financing the work, the battle for eradication will be lost."

The most serious obstacle to the successful progress of eradication work, according to Doctors Faull and Boyce, and virtually all others who have closely followed the eradication campaign, is the policy of the Federal Government of attempting to deal with the emergency too largely with WPA labor.

"The federal organization," Doctors Faull and Boyce point out, "is now based on a small and efficient personnel on a year-long basis, but the vast majority of the workers, even for the exacting work of examination of the trees, which requires physically agile labor of more than average intelligence, must be obtained from the relief rolls through the WPA. (Nearly ninety per cent of all expenditures has come from WPA allotments). Only a small number of men from the relief rolls are qualified for this work, no matter how much training is given them, and the number is steadily declining, while the

number of men who never can do such work satisfactorily increases. They are mostly city men unused to the woods.

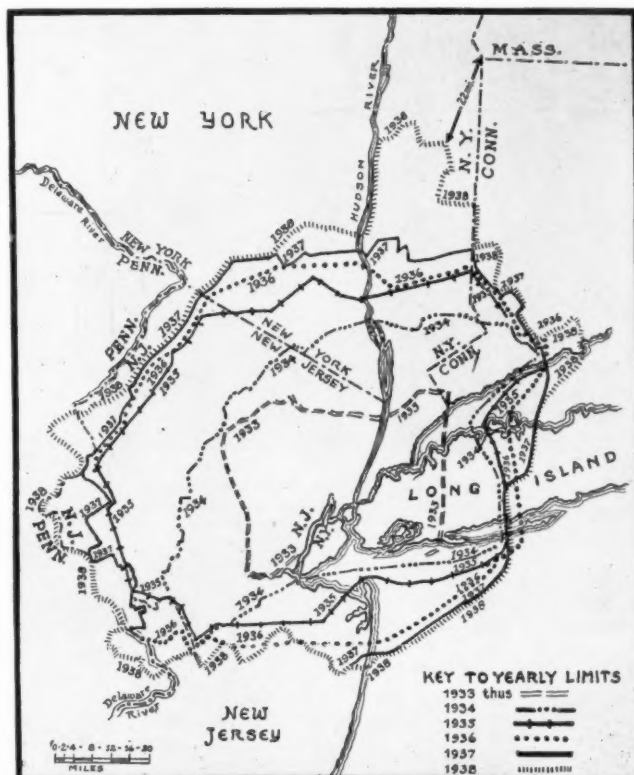
"Furthermore, the relief roll workers are so hedged with restrictions as to the number of work hours per month and the fact that they cannot be employed except in the vicinity of the locality from which they are registered on the relief rolls, that even the satisfactory men among them cannot be used to full efficiency.

"If it were not so tragic, it would be absurd, that during the most critical period for operations against the disease, the field personnel and equipment must remain inactive for periods of several days to a week or more, and this condition has prevailed practically every year since the work was started. Systematic scouting should begin in May, but this year it was not started until July 9th. June is the most effective period for this work. This irregularity and uncertainty utterly demoralizes the field forces.

"Furthermore, the federal organization is badly hampered because it does not know from year to year what

funds will be available or when they will be allotted. Plans are made well in advance, only to have them disrupted and delayed. For example, in the latter part of June, 1938, all the WPA workers had to be dropped because it was not known whether any funds would be available for the fiscal year beginning July 1. Even when funds were made available July 1, it was not known until August just exactly how they could be expended.

"A campaign against tree diseases caused by introduced parasites is analogous to a war against an invading army. Counter action must be speedy and carried out by an adequate number of properly trained and equipped effectives. Imagine the chance of driving



Prepared for the New England Committee on Dutch Elm Disease
The steady outward progress of Dutch Elm Disease from 1933 to 1938, as shown above, presents an ever-increasing threat to our elms

out the invaders if the defense had no idea as to whether any men at all would be available, when they would be available, and then after mobilization, the line troops were all given simultaneous furloughs for periods during the critical part of the campaign from which many of the best of them did not return.

"It is certain that, if continued under the present method of depending mainly on workers from the relief rolls, the attempt to eradicate the Dutch elm disease will fail.

"Hope lies in making a regular appropriation to be handled by the United States Department of Agriculture, at least so far as scouting is concerned. Supplementing the amount to be expended under the direct control of the United States Department of Agriculture, relief workers from the WPA rolls could be used under proper supervision for removing infected elms and those which are so reduced in vigor that they afford breeding places for the beetles which carry the disease. This work can largely be done in the autumn, winter and early spring when elms cannot be examined for the disease and when relief rolls are highest.

"By the several years' delay so far in allotting regular funds in sufficient amount and allocated so they could be used with maximum effectiveness, eradication of the Dutch elm disease has been reduced from a reasonable to only a fighting chance, further complicated by the recent hurricane that swept New Jersey, eastern New York and southern New England, overthrowing a vast number of trees, including elms. These innumerable elm windfalls will form breeding places for the bark beetle carriers of the disease. Even though these wind-blown elms can be all removed, which seems impossible because of the extensive areas of forest land involved, the wood piles created will be a serious problem since they also are excellent breeding places for the beetles."

It is still too early at this writing to report fully on the results of the scouting campaign of the past summer. It is possible, however, to draw a rough picture of the situation. In general, an increase of infection as well as a spread of infected territory is shown. This is especially true of the main infected area centering about New York City.

The greatest extension of territory has been into Dutchess County, New York, on the east side of the Hudson River, and adjacent to the Connecticut line. It is understood that here over forty-five diseased elms

have been found, rather widely scattered, where no disease had been known to be present before. This extension is perhaps the most disturbing development of the year.

In New Jersey and adjacent parts of Pennsylvania, and in Connecticut, the disease has also been found in new territory. Over three times as many diseased trees were found this year in New Jersey as in 1937. In these cases, it is possible that the experiment of killing undesired elms by poisoning, and permitting them to remain standing, was the chief cause of this extension.

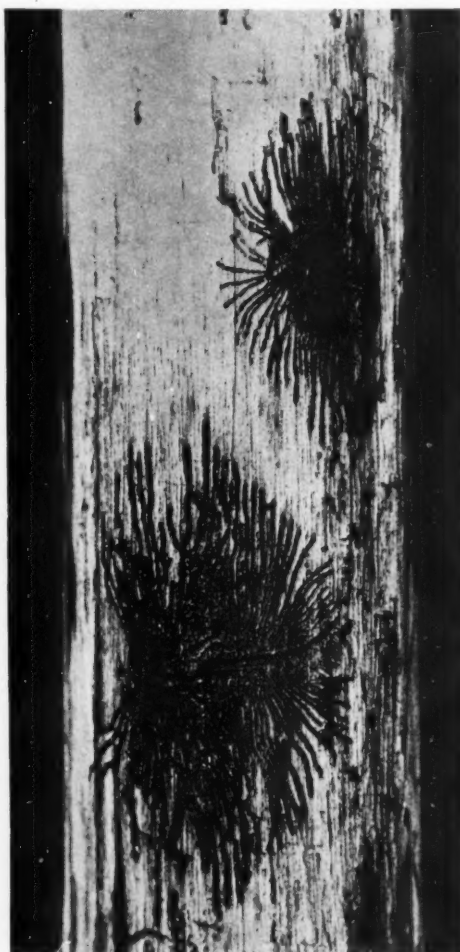
At any rate, the unfortunate result of this well meant experiment has been a very large increase of the *Scolytus* beetles chiefly responsible for spreading the disease, and a resulting marked increase in diseased trees in the neighborhood of the poisoned elms. Fortunately, these areas will henceforth be substantially out of the picture, since the breeding of the beetles will not continue in the completely killed trees.

There is a somewhat brighter side to the picture in Westchester County, New York, and the area to the south. Here, where federal, state, and local cooperation has been especially effective, there has been a marked reduction in the number of diseased trees. This shows what careful, systematic work by a permanent force of dependable employees can accomplish. Another hopeful sign, in states outside the main infected area where localized infections have been found in past years, is the fact that in many cases the infections seem to have been wiped out, no diseased trees having been found for two or more years. These results are further indicative of what could be expected if a well organized effort could be made over a period of years.

It is obvious that every increase in the infected area necessitates a corresponding increase in the amount of money needed for scouting, and a corresponding increase

of the chances for the disease getting completely out of hand. Qualified experts express the opinion that special attention must be given to the outer limits of infected areas, so as to prevent further spread. Work of the highest effectiveness inside the infected zones will be practically thrown away if the disease is permitted each year to occupy more and more territory.

In summing up the general situation, Doctors Faull and Boyce state: "Since the discovery of the Dutch elm disease in the United States in 1929 small infected areas have been found in Ohio, Indiana, Virginia, West Vir-



New York Botanical Journal

Beautiful in design but deadly in significance—these are the channels mined by the beetles which carry the Dutch Elm Disease

ginia, Pennsylvania, Eastern Connecticut and a large area about sixty miles in radius extending from New York City as a center into New Jersey, New York, and Connecticut. Most of the small isolated infections seem to have been eradicated, but in the New York area the spread of the disease has not yet been wholly arrested. The additional territory invaded this year in New York increases the area to be scouted by about 900 square miles, in New Jersey by about sixty square miles; in Connecticut the spread was insignificant. These facts show that the fight to eradicate the disease is now at a most critical stage. * * *

"In our judgment the federal and state officials charged with eradication have done an excellent job under the most discouraging conditions. There is ample evidence in the New York area that the disease can be conquered wherever the work is adequately financed under proper planning and execution. On the other hand, there are many disquieting factors in the present situation that call for immediate correction."

Specifically, the situation, according to Doctors Faull and Boyce, calls for: (1) organization and execution of all scouting and supervisory work under regular appropriations instead of WPA allotments; (2) use of WPA workers only on the so-called sanitation part of the program; (3) more intensive eradication on the outer limits of the disease areas in New York and Connecticut; (4) special efforts to dispose of all elms broken or uprooted by the New England hurricane, and (5) more rigid restrictions against the removal of elm wood from areas in which the disease has been found.

Most important of these recommendations is that the government provide funds other than WPA that will permit the uninterrupted and flexible employment of men qualified by training, expertness and physical ability to perform the key tasks of eradication. These are scouting, climbing, sampling, and field supervision. WPA labor can help but it should be confined to what is called clean-up work.

The foregoing is not a criticism of the Works Progress Administration. That agency deserves great credit for its interest, cooperation and liberality of funds. Its own officers recognize the defects and handicaps of WPA labor when applied to work calling for unflinching continuity and for special ability. This recommendation, therefore, is common sense recognition after several years of experience that reliance upon WPA labor to do the technical work of eradication is a suicidal policy for the elms and an unwarranted haz-



Able bodied men must frequently climb the diseased trees and let the branches down one by one to avoid damaging nearby buildings and wires

ard to the public investment already made in this work. Certainly with a few more seasons such as the one just ended, the fight to eradicate the Dutch elm disease will be lost.

This is a serious situation—the most critical since the disease invaded our land. It calls for the government and the states to act, and act promptly, to realign and reorganize the battle lines. And it calls for citizens everywhere to demand that this be done *before it is too late*.



THE STORY OF MISTLETOE

By GENEVIEVE MONSCH



*"Hail, hail to its leaves of rich green,
With pearls that are fit for a queen,
So pure and so white.
Such emblems of innocent mirth
We'll value as blessings on earth."*

American Mistletoe (*Phoradendron flavescens*).
Similar to the European mistletoe, sacred in
antique lore and sung by the Ancients in prose
and poem. Photograph by J. Horace McFarland

WITH the single exception of the holly, there is perhaps no other plant so closely associated with the festive gaieties of Christmas as the mistletoe. There is certainly none so curious in its habits of growth and mode of reproduction, and none around which cluster so many strange myths and traditions. Admired because of its modest beauty, it is at the same time despised as a tree pest. Our ancient ancestors regarded it as a very mysterious plant and, today, it still holds a tight grip on the sentiment of the world.

Its strange method of living high up on the branches of the plants was not understood in the long distant past. As a consequence, it aroused religious reverence and superstitious fears, and many of its traditions and legends have come down to us little changed. Anciently, the European species was not only held sacred by the Celts and the Romans but it was credited with magical properties, references to many of which are frequent in both poetry and prose.

The mistletoe proper, *Viscum album*, is a native of Europe, being widely distributed there as well as throughout Asia. Strangely enough, it has not become established in Scotland nor in northern England and Ireland, although it grows in abundance in southern

England. This is one of the facts about mistletoe which puzzled botanists for a long time, particularly when it was found that it may easily be artificially planted in those sections. The explanation seems to be that these localities are not frequented by the winter migratory birds, and the berries of this plant have no other means of dissemination.

This species is closely related to the common American species and is very similar to it in general appearance. Botanically, however, the differences are so marked as to constitute two well-defined genera. The American genus, *Phoradendron*, has floral parts in threes, sepals and ovary adherent, and the clusters of flowers in spikes, while the European genus has cymes of flowers, with distinctly separate sepals and ovary, and floral parts in fours.

The European species is a handsomer plant than the American, with larger, waxier berries, smaller leaves, and a more graceful habit of branching. Otherwise, it is a dense evergreen shrub, parasitic on trees, with branches, flowers, berries and buds, very generally resembling the mistletoe we know so well.

The European mistletoe grows on deciduous and evergreen trees. Its favorite hosts are frequently the

apple and some of its relatives—hawthorne, crab-apple, service berry and pear. In Herefordshire, northern France and the Tyrol it has caused much damage to the orchards. In the Himalayas it infests the apricot and grape. It is also found, but less luxuriantly, on the elm, tupelo, red maple, mountain ash, ash, sycamore, basswood, poplar, cypress, willow, larch, locusts, fir, and other trees. Strange to say, it is so rarely found on the oak that only seven authentic cases have been recorded.

Some years ago the Society of Arts offered a prize for locating mistletoe on oak trees. Only two specimens, one from Gloucestershire and one from Godalming, were reported. There is, however, an oak tree near Ladbury, at the base of Malvern Hills, upon which the mistletoe authentically grew in 1900.

Perhaps, since it is so very rare on oaks, the mistletoe as we know it, *Viscum album*, is not the ceremonial plant of the ancient Druids. Perhaps it was the closely related species, *Loranthus europaeus*, which was the historic parasitic plant of pagan worship. This species does occur on oaks throughout a part of its southern range.

There is a very old tradition, long current in England, that the mistletoe was once a fair tree in the forest; that from its wood was made the cross upon which Christ was crucified. During the reign of George I it was actually called *lignum Sanctae Crucis*, meaning the "wood of the holy cross." Having been put to such a use, the mistletoe was cursed and thenceforth condemned to live as the most despicable of plants.

Reverence paid the mistletoe by the ancient Druids was extraordinary. Wrote Pliny: "The Druids held nothing more sacred than the mistletoe provided it be on an oak. They looked upon it as a certain sign that 'their god hath made choice of that tree for himself.' With grave, elaborate ceremony, they gathered the mistletoe on the sixth day after the first new moon of each year—and, at no other time,—exhorting all to assist at the ceremony in these words, '*Ad viscum. Annus novus*'—the New Year is at hand. Gather the mistletoe." In long triumphal stately processions headed by their high priests, they traveled to the oak grove where the parasite grew. There the Prince of the Druid priests would take the golden hook from the herald and mount the sacred tree. As he cut the branches they were caught on a special white cloth held outspread below. If a piece of it even so much as touched the earth it was an omen of misfortune to the land. With solemn ceremony, they raised an altar of straw after which two pure white bulls, never yoked, were brought forth for sacrifice and offered to the deity with prayers that he would prosper all those to whom he had given so precious a boon. The mystic plant was then cut into bits with the golden blade and distributed among those who could afford the fabulous price.

The proud possessor of such a consecrated piece wore it as an amulet around the neck as a chest protector against the

attacks of fiends. So long as it did not touch the ground, it was supposed to keep away witches and evil spirits and to be a token of safety, good fortune and happiness. Held in the hand it invoked the appearance of ghosts and was thought to give the possessor the ability to see them and to make them speak. A piece of it taken home and hung over the doorways of dwellings secured the same protection for homes and for all those who passed under the spray. Perhaps our custom of hanging mistletoe, instead of using it in vases as we do other cut plants, is a survival of these pagan customs and superstitions.

Because of the prominent part mistletoe played in Druid sacrificial religious ceremonies it was not permitted to be used in churches by the early Christians. In recent years, however, this prejudice has disappeared.

Our custom of kissing under the mistletoe is supposed, by some, to date back to our Saxon ancestors and to be an indubitable relic of the days of the old Druids' ceremonials. A legend in Roman mythology has it that mistletoe was also held sacred to Proserpine. Aeneas was guided by her doves to the tree whereon grew the "golden bough," different from the tree itself. He had to pluck this *auri comus fetus* and present it as an offering to Proserpine as the sole condition under which he might enter and visit the magical realms below.

In further illustration of this custom of using mistle-



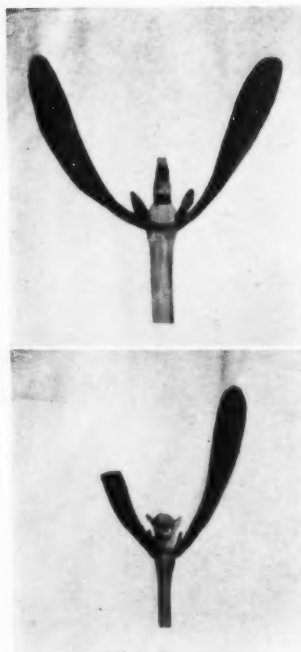
European Mistletoe (*Viscum album*), Christmas plant of mystery and sentimental legend

J. Horace McFarland

toe as a passport to the nether regions, the peasants of Holstein and some other places, even to this day, call it *Maren-taken*, meaning the branch of phantoms, from the supposition that it has a magic power over specters and the ability to render spirits visible and obedient to human love.

During their dissolute feasts of Saturnalia—the “turning of the Sun” — in mid-December, when their days were coldest, the ancient Romans ornamented their temples and dwellings with boughs of mistletoe, holly and other evergreens, to convert them into a refuge for woodland spirits from the inclemency of the weather, as an act of propitiation.

In Norse mythology, Balder was the god who personified the sun and the charm of summer. He was the son of Odin and Frigga, the queen of the gods, and was a general favorite with the gods and goddesses because of his beauty and goodness. One night, Balder had a dreadful dream in which he was warned that his life was in imminent danger. His mother, much terrified, extracted from all of the four elements—fire, air, earth and water—and from all living things springing from them save a small, insignificant mistletoe growing on an oak at the gate of Valhalla, a promise that they would not injure her son. The gods, in sport and with laughter and glee, made a pastime of casting stones and dangerous missiles at Balder, the “invulnerable,” just to see them fall harmlessly to the ground.



Upper — Female flowers somewhat more developed than the male, (below)—with one axillary and two lateral blossoms



This is the male plant of European mistletoe (*Viscum album*) in blossom, showing suckers piercing a branch of an apple tree. (Permission of A. J. Nystrom & Company, Chicago, Illinois)



A piece of fir wood showing the holes caused by mistletoe suckers. (Permission A. J. Nystrom, Chicago)

But Balder had one secret, unsuspected enemy, the wicked Loki, who hated Balder because he was the great favorite of all of the gods. Resolving to learn the secret of Balder's immunity, Loki transformed himself into an old woman. He called on Frigga, and, wheedling himself into her good graces, won the secret of Balder's safety. She acknowledged that the mistletoe alone, among all things, had not taken the oath. However, she thought it too small and insignificant a plant to do him harm, even if it would. Loki left rejoicing, and, assuming his own shape, seized upon the largest bough of mistletoe he could find and fashioned it into an arrow. This he put into the hands of Balder's brother, Hoder, the god of darkness and himself blind, urging him also to join in doing honor to his much loved brother. Loki then guided his arm just to “test” the weapon. It struck with fatal force, piercing the heart of the hapless Balder. His death so angered the gods that they immediately decreed that from that time on the mistletoe must be a mere parasite, without any possibility of an independent existence, doomed always to prey on other trees. According to the same myth, the berries which appeared on the plant were the tears of the lovely Frigga, shed at the death of her beloved son.

However, as a sequel to this, legend tells us Balder was again miraculously restored to life. The mistletoe, now peculiarly doomed forever a parasite, was given to the care of the goddess Frigga, the goddess of love, to compensate her for her sorrow and fright, as long as it did not touch the earth, for the earth was Loki's jurisdiction. She decreed that, since the mistletoe was guiltless in the death of her son, thereafter anyone under the mistletoe may receive a kiss as an assurance that the plant is an emblem of peace and love and that it has no power to cause misfortune, sorrow or death. Here, in the legend of Balder and Frigga is another explanation of the long established custom of kissing under the mistletoe bough.

Evolutionists tell us but little of the probable line of development of these unique plants. By some old English authorities they were supposed to have degenerated from an aberrant branch of the honeysuckle family, the relationship having been established because of a supposed resemblance between the practically leafless Mediterranean mistletoe with the little English moschatel, resembling somewhat our elder. Modern botanists, on the other hand, have rather closely associated them with the *Vitaceae* and the *Aristolacaceae* where the relationship, between the flowers and fruits especially, seems much closer. There is very little doubt but that the family originated in Asia and spread completely around the earth into all the warmer regions, almost to the limits of the cool temperate zones.

Even the origin of the word "mistletoe" is wrapped in obscurity. It may have been derived from the Anglo-Saxon "mistle-tan," meaning "a different twig," the mistletoe twigs appearing as "other" or "different" twigs on the host. Again, it may have been derived from an obsolete English word, "miston," signifying the "state of being mingled," referring to the intermingling of the branches of the host and the parasite.

The genus name *Phoradendron* is plainly derived from two Greek words, *phor*, a thief, and *dendron*, a tree or a woody plant, alluding to its parasitic habit. *Viscum*, the genus name of the European mistletoe, comes from the Latin, meaning bird-lime, re- (Continuing on page 564)



J. Horace McFarland

The beautiful parasite in the winter woods



United States Forest Service

Mistletoe decorates a tree in Texas. Right — An infestation on lodgepole pine



CALL OF THE WILDERNESS

Wild Forests and Great Silent Peaks of Colorado's Last Frontier Lure the Pioneering Trail Riders of the Wilderness



By

MARY W.
RUFFNER

Colorado Trail Riders of 1938—twelve days out on wilderness trails

A PACK caravan such as the central Colorado Rockies had never seen before left Ashcroft, ghost mining town, for Cathedral Lakes and Panorama Trail on the morning of August 4, 1938. It was the pioneer Colorado expedition of The American Forestry Association's Trail Riders of the Wilderness, heading for the wild forests and silent rocks of the high regions of the Maroon Bells—Snowmass Wilderness of the Holy Cross National Forest. There were forty-five people and eighty-one pack and saddle horses. For two weeks this small army became infinitesimal, melting into the rugged grandeur of the unspoiled back country.

Ten mountain passes were assailed and conquered. Ten separate camp sites, all somewhere near timberline, were chosen and made into temporary homes. Ten rushing streams or icy lakes suddenly found a dozen tents on their primitive banks. And stretched out in these remote haunts, to become the center of extreme interest three times each day, a cook's canopy arose, from beneath which issued the most delectable culinary delights, rich with all the vitamins of home.

As a member of this caravan, as a veteran Trail Rider pioneering again, it is a joy to relive this great adventure and to share it with those readers of AMERICAN FORESTS who have not answered the call of the wilderness. And what better way to do this than to pass on the brief notes made when the horizon was just ahead and when the trail leading to it was a trail of enchantment! So—

First Pass: We go through aspen woods, then up a steep gulch, a thousand feet above and overlooking Pine Creek which tumbles downhill for thousands of feet. On the ridge of the mountains, well above timberline, two elk are sighted on the horizon, tiny legged

and horned specks. Up *The Steps*—not a true pass—a precipitous zigzag trail, only five horses are allowed to mount at a time to avoid rock slides and dizziness. The trail is good but the look over the edge is a thousand feet. Camp lies below Cathedral Lake, after views of Mount Hayden, 13,500 feet elevation, Taylor Peak, 13,419 feet, Cathedral Peak 14,000 feet, and Castle Peak, 14,259 feet.

Second Pass: We climb up to Electric Pass, 13,500 feet above sea level, the edge-top of the world. From the narrow ridge we have a complete panorama of two rich valleys and many mountain ranges: Mounts Longs, Elbert and Evans on the east; Snowmass and Maroon Peaks on the west; the plateau and peaks of the White River country slightly north. Here are scenes at once the despair and the delight of photographers. Descending in small units, we lead our horses down a trail of loose shale, just put into tip-top shape by the Forest Service. Serooing figuratively against the solid side of the red-brown mountain and trying hard to forget the emptiness in front, we see out of the corner of our eye 2,000 feet of steepness away down, in front and in back, with tremendous vistas out into space, full of varying colors.

In groups of five, it requires more than two hours for the riders to descend, another two and a half hours for the pack train. And no accidents, save one slipping pack!

Third and Fourth Pass: Riding up Conundrum Creek through high mountain meadows ablaze with wild flowers, we make Triangle Pass and East Maroon Pass on the third day. Along Triangle, the rocks are a murderous chocolate color, great mountains of rock in cubic, crystalline formations. Evidence of glaciation

are numerous throughout. Moraines, looking like the remains of huge, dredging processes, lie about the Cathedral Lake district, and tremendous avalanches of rock have piled up steep slides of talus, or shale.

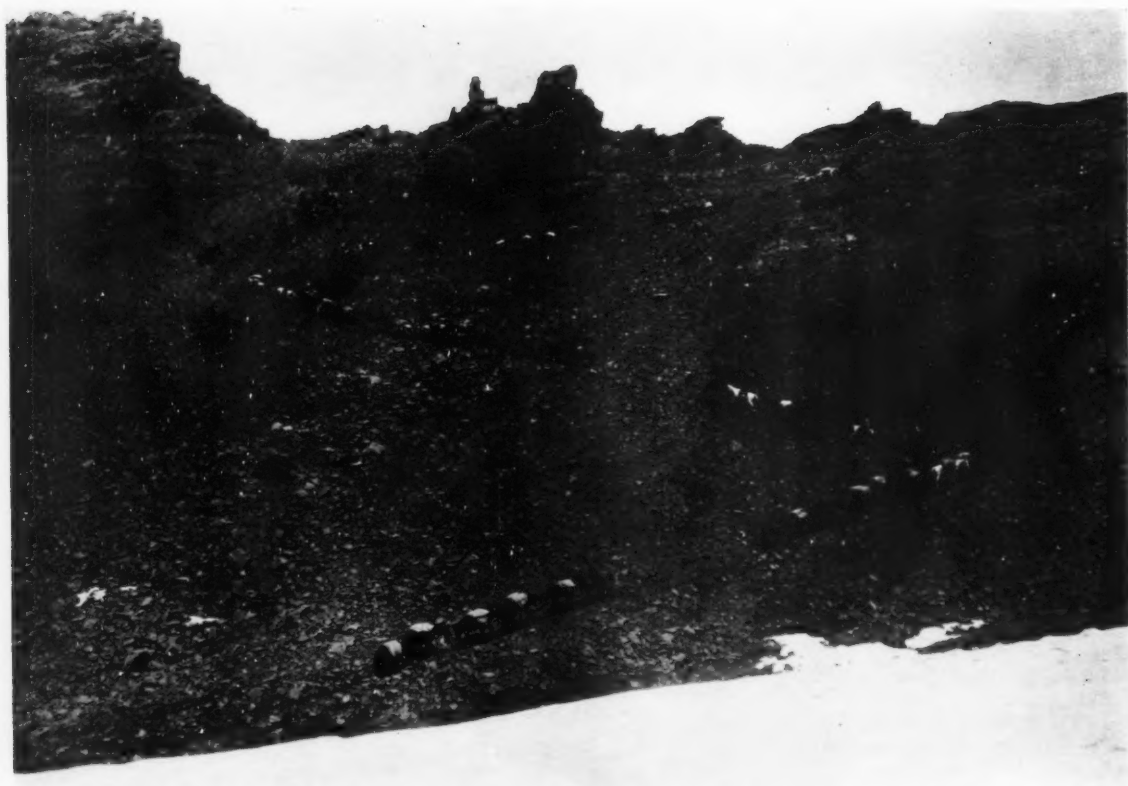
From our lunch spot in East Maroon Basin, where the pack train passes us, we watch it go over our fourth pass, like a string of little black ants. The silhouettes of these tiny, spider-like legs and bodies are unmistakable. One can make out "horse" or "man" or "man on horse" or "man leading horse." The pack train is made up in groups of six animals, five of them roped together end to end, the tail of the horse in front doubled up and tied securely to the halter of the next horse—most uncomfortable for the tails, I have heard. A wrangler takes the lead rope in hand and rides his horse at the front. Thus the six have to weave in and out like one animal, a sort of caterpillar. Occasionally a horse inadvertently steps over his rope, gets hobbled and begins to jump about in unpredictable excitement.

Fifth Pass: Past White Rock Mountain, 13,532 elevation, its tough, rocky hide looming up impressively, we travel swiftly down the Copper Creek trail through a tall stand of Engelmann spruce and soft, alpine fir, fresh with morning dew. Finally the remains of Gothic, ghost mining town, with a



Above — From Electric Pass, 13,500 feet elevation, we look with wonder into the world we have come to conquer—Snowmass Mountain, one of our objectives,—white in the far distance

From the Pass, we zig-zag down 2,000 feet of barren steepness to a shoulder of the mountain, where we rest before descending another 2,000 feet to Conundrum Creek



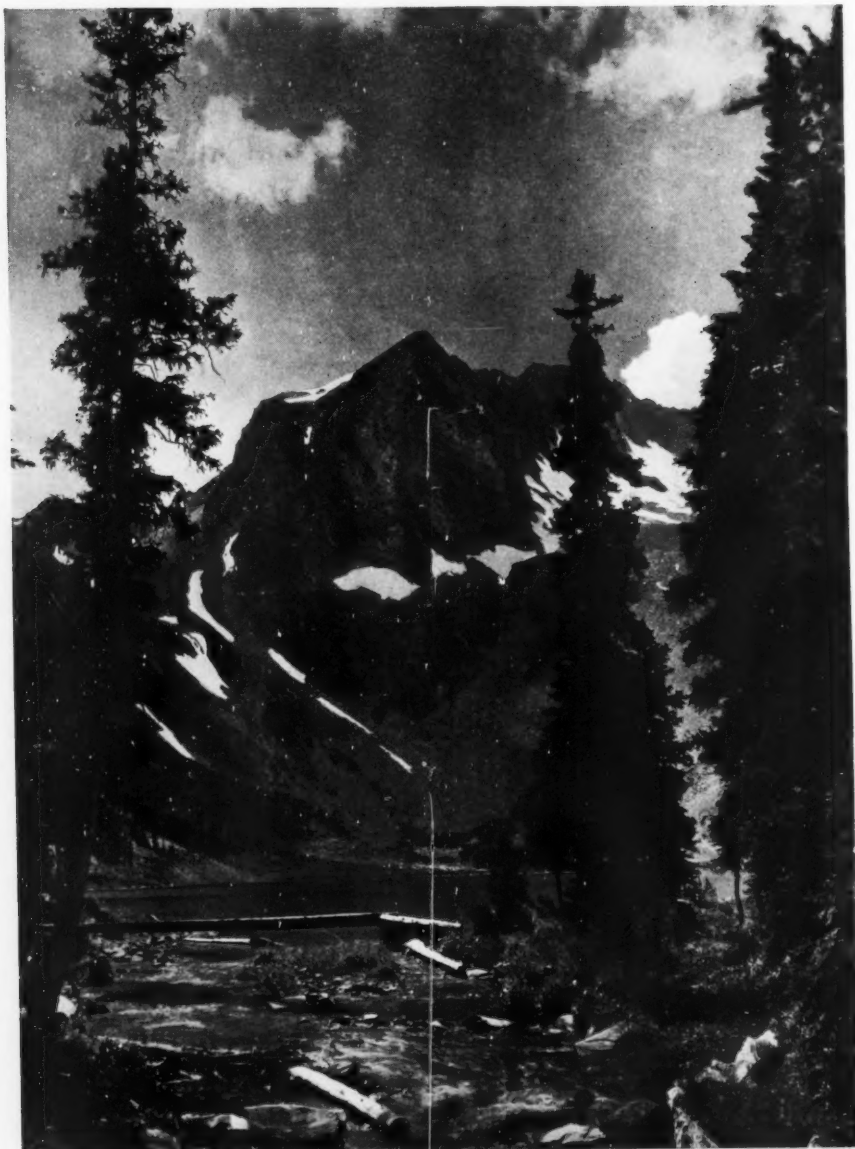
From our lunch-spot in East Maroon Basin the third day, the pack-train passes us and we watch it precede us over our fourth pass, looking like a string of little black ants



Past the old ghost mining town of Gothic, we ride at noon on the fifth day into the flowering meadows of Rustler's Gulch



And on the seventh day, we go over West Maroon Pass and down to Maroon Lakes, where we make camp in the rose-tinted shadows of the beautiful Maroon-Bells



Up again to Buckskin Pass and the trail leads down to Snowmass Lake, glittering among the trees at the foot of Snowmass Mountain

Chuck time at our Snowmass camp, where a barbecued lamb helped to curb keen appetites



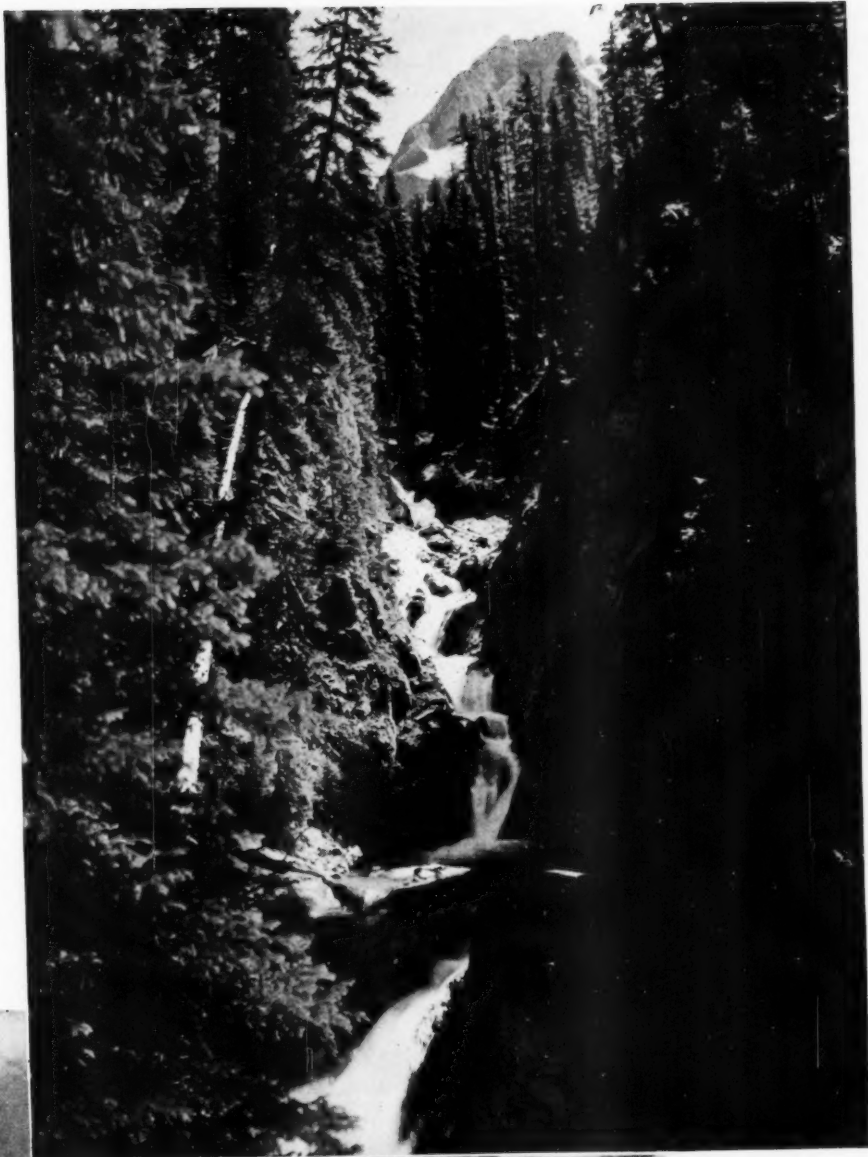
number of people waiting in the distance to see us come around the mountain into the East River Valley, through grand forest and flowering meadow land. Here are incredible wild flowers, in fields and in great masses, paint brush in many colors—red, carmine, scarlet mauve, maroon, pale—and myriads of a pale, “cat’s-claw” flower on a dark wine-colored stem; scarlet gilia; huge, white cow-parsnips, much prettier than their name; larkspur as tall as a horse; and much poisonous aconite all around. Also the columbines, startling in a white clarity, grow profusely all over these upper regions of the mountains. Much more democratic than in lower regions, they mix freely with the other flowers on the hillsides and in the meadows. Their delicacy is more fragile than wax, more shapely than any other known blossom—a double star with airy spurs behind. Their starry whiteness, sometimes colored with pale or darker blue, shines like poetry made visible.

The valley spreads out before us, more and more

superb, as we mount to Schofield Pass and into Schofield Park, skirting Belleview Mountain into a trackless and grand, high country of lush pasture land.

Sixth Pass: Slowly climbing we reach Sheep Pass and face a remarkable view of Snowmass Peak, 14,077 feet elevation, Hagerman Peak, 12,600 feet, and Capitol Peak, 14,100 feet, with Maroon Peak, 14,126 feet, to our right. But we find no trail, no pass, no savvy. We feel tremendously lost, get out a huge foresters' map, sight the country from the top of a distant ridge, retrace our tracks to the south of Maroon Peak, and find our true trail over West Maroon Pass, leading through a beautiful, purple valley in the face of the Maroon Bells group. We camp at Crater or Upper Maroon Lake, with its three waterfalls, the first a straight drop of 100 feet, the second a thin, cascading stream dropping by stairs 150 feet, the third a large and powerful falls combining both methods of

(Continuing on page 572)



The last day and the most beautiful trail—up Avalanche Creek through dense forests and into the indestructible presence of Capitol Peak

A final "shot" before going over Capitol Pass—our tenth and last pass—after thirteen glorious days on the trail



Here in New Hampshire is portrayed the fire traps left by the winds



Salvageable trees after inflammable brush has been cleaned out



Removing inflammable blowdown material from roadsides in New Hampshire

REAPING WHAT THE

Federal and State Agencies go into Action to Protect and Salvage Several Billion Feet of Timber Blown Down by the New England Hurricane

THE story of New England's forest catastrophe resulting from the hurricane of September 21 has already been told in *AMERICAN FORESTS*. The response of federal, state and local agencies to the problem of billions of feet of timber blown down and that of reaping what the winds had sown is another and rapidly moving story. Its beginnings can now be told.

The hurricane fell upon large timber owners but it was among owners of some 30,000 farm woodlots that tragedy stalked. Many of these woodlands representing savings of a lifetime were wiped out. Others were so badly damaged that owners stood face to face with bankruptcy and loss of their farms.

So great was the forest destruction that after the storm had passed people doubted if attempts could possibly succeed to salvage much of what the wind had felled through six states. On sixty-seven small properties near Meredith, New Hampshire, by way of example, more than 10,000,000 feet of merchantable logs were on the ground. Sawmills operating there could cut only 2,000,000 feet by next July. Men were scarce. Funds to finance labor and equipment were scarcer still. The jungle of down timber formed horrible fire-traps that threatened to wipe out timber, homes and towns by fire. How could they be protected? If that were possible, how salvage the down timber before blue-stained fungi ruined it for lumber? And how and to whom could logs that represented more than ten times the normal cut of the six states involved be sold without ruining the market and the owner?

Questions and doubts soon gave way to determination and action. Forest agencies took organized leadership. On October 3, state foresters of the states concerned

AMERICAN FORESTS

WINDS HAVE SOWN

By R. F. HAMMATT

Photographs by the United States Forest Service.

met with regional forester R. M. Evans of the federal Forest Service. Action followed. The extent of the forest disaster was surveyed. The task of fire protection, of timber salvage, and of making plans for action within each state were undertaken. Secretary Wallace commissioned F. A. Silcox, chief of the federal Forest Service, to bring to the situation all resources at the command of the Department.

From that time on efforts have moved rapidly toward two main objectives; one, to remove as quickly as possible the menace of fire represented by the wind-blown debris; two, to help timber owners by financial and other means to salvage, and realize as much as possible on their down timber. The following notes taken from my diary record highlights in this moving scene during its early days.

October 6, Washington: Evans reports that damage on the White Mountain National Forest includes 150 miles of telephone lines out of commission; 1,000 miles of trail blocked; roads washed out and crisscrossed with as many as 200 trees per mile; campgrounds damaged; new landslides; 150 to 200 million feet of timber down; urgent need to reduce an unprecedented fire hazard spread over 800,000 acres before three million visitors invade New England next July. Silcox asks Tinker, his Assistant Chief in charge of the Division of State and Private Forestry, to handle fire hazard reduction and related problems outside the National Forests in New England. Choosing five assistants, Tinker leaves for Boston.

October 7, en route: The party analyzes data already available; assigns priority to hazard reduction, salvage, and forest rehabilitation in the order named; determines probable size of the first job; telegraphs for thirty-two hand-picked men to report at once; decides on personnel for a central office in Boston. Tinker wires Governors



A forester surveys the task of clearing up the wind-fall



Salvaged logs from a blow-down of white pine



A small sawmill begins cutting salvaged logs into lumber

and State Foresters, asking the latter to meet with him in Boston on October 9.

October 8, Boston: Following reports of extreme fire hazard, the President wires Silcox from Hyde Park to "Please do the necessary in cooperation with Hopkins and Fechner." Six forest officers, previously sent to New England, arrive with the data they have gathered. Conditions are reviewed, tentative plans are drawn. Decision is for decentralized organizations in each state, with assignment of most of the thirty-two experienced men to help established agencies plan, correlate, and execute the jobs on the ground. Conference held with representatives of the Commodity Credit Division of the Reconstruction Finance Corporation, and of the Farm Security Administration, who came from Washington to appraise timber salvage situation.

October 9, Boston: Sunday, but no church for us. Hawes, Cook, Merrill, and Foster, State Foresters for Connecticut, Massachusetts, Vermont, and New Hampshire, confer with Tinker and his aides. They analyze and modify yesterday's tentative plans; draft policy, procedure, and standards for fire hazard reduction. After approval by State Foresters of plans, standards, and action programs, conference breaks up at midnight. The vanguard of thirty-two experienced Forest Service men arrive.

October 10, Boston: The rear guard arrive by train and plane. Those who came last night were from New England. Today's group comes from the Lake States and the South. We go into a huddle. Conditions are reviewed, plans discussed. Men are assigned to the states, and depart, in accordance with promises made yesterday. In conference with Silcox at Washington, Harry Hopkins gives impetus to the hazard reduction program. And Bob Fechner comes through with his CCC. State WPA Directors and State Foresters are notified.

October 11, Boston: With WPA officials, details are drawn up for hazard reduction projects in each state. Standards for the work are issued, with emphasis on the need to preserve salvageable values. Some of us attend meetings of lumbermen in Maine, Connecticut, and Massachusetts. Report on the salvage situation is completed and forwarded to Washington. It includes a plan of action for the Chief to use in discussions with Jesse Jones, Chairman of the RFC.

October 12, Boston: Office space secured through the National Emergency Council. The Weather Bureau, with our Division of Research, arranges to install special stations so region-wide and local reports of existing and predicted forest fire danger can be assembled, interpreted, and issued. Instruments for ten stations are located, promptly commandeered; CCC resources—money, men, and equipment—are correlated and fitted into the program. Man-power of all CCC camps in the hurricane belt is strengthened. Two camps, now vacant, are being reoccupied. Many side camps will be established, nine state park camps transferred to hazard reduction work, and state lines will no longer apply so far as CCC hazard reduction activities are concerned. Project Directors phone that initial WPA projects have been approved in all affected states and have been forwarded to Washington for clearance there. Vermont puts eighty-two WPA men on patrol. New Hampshire promises 200 men for hazard reduction on the thirteenth. Massachusetts reports work will start on the fourteenth; Maine, Rhode Island, and Connecticut on the fifteenth. Also New

York, where forest damage is confined to Long Island.

So much for the early chronological record. The hazard reduction policy, to which reference has been made, set April 1 as a deadline and provided for action programs to: (1) Place hazard reduction crews on a fire protection basis and, where coverage is not adequate from a public safety standpoint, to supplement these crews by fire patrols; (2) reestablish fire protection communication and replace lookout towers; (3) open up existing roads; (4) clear high hazard material from dwellings and villages where human life is most endangered; (5) open up existing fire lanes; (6) dispose of special or above normal hazard non-salvageable material within fifty feet of all roads, fire lanes, railroads, streams, lakes, or other areas of concentrated use or travel, open ways to all water holes, and establish new water holes where conditions warrant; (7) construct fire lanes across private lands *where necessary in the public safety*, gridironing high-hazard blocks. Remove inflammable blowdown by piling and burning all nonsalvageable material, or by dragging it out of cleared strips and scattering it. Pile brush where it can be burned without damage to standing trees or merchantable material.

In the meantime Lake States and Canadian forest fires, in which men, women, and children lost their lives, were followed by fires in New England. One at Gastonbury, Vermont, "outdistanced more than 400 men"; another "was stopped just before it reached summer cottages." Grafton village was threatened. New England forests within the hurricane area were closed tight. People were arrested for being in the woods with guns. Special patrols were established; automobiles were stopped and occupants warned; and towns were mobilized.

And as of November 5, the Boston Office, New England Forest Emergency, reported that—in addition to heavy forces recruited under projects sponsored by towns—17,000 men were at work on fire hazard reduction in six New England States; that 12,500 of them had been furnished, with tools and transportation, by the Works Progress Administration, while 4,500 were members of the CCC. Boston also reported installation of fuel moisture measuring apparatus, anemometers, rain gauges and fire danger meters at nine national forest fire stations in the blowdown area, with locations determined for thirty-four additional state stations to be similarly equipped well before spring.

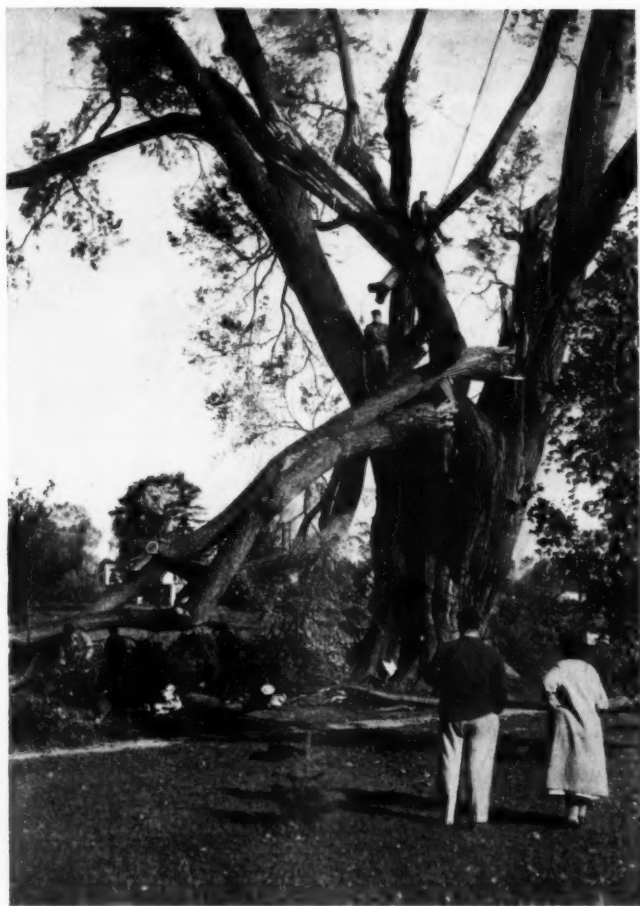
Hazard reduction is essential to public safety in New England, but, as Mr. Silcox stressed in conferences with the RFC, salvage is vital to the economic welfare of agriculture, industry and labor there. And here New England faces a terrific task. For the main blowdown extends from the coast to Canada and is bounded by the Connecticut and the Saco Rivers. Here, flat on the ground, are now some 3,250,000,000 feet of timber. Approximately 1,600,000,000 may perhaps be recovered. About eighty per cent is softwoods—mostly pine. The balance is hardwoods.

These conditions are complicated by the large number of resident and nonresident owners of small tracts, many of whom lack equipment and funds for salvage operations; by the need to have all logs either sawn or in ponds for storage before next July; by the nature of the New England softwood lumber trade, which has in general been confined to round-edge and square-edge box boards; by the fact that the estimated volume of softwoods now on the ground is ten times the normal New England cut. (Continuing on page 562)

IN THE PATH OF THE STORM . . .



H. Rosster Snyder,
Gulfport, Connecticut



Robert B. Ficks,
Courtesy The Hartford Courant

THE WETHERSFIELD ELM—BEFORE AND AFTER THE HURRICANE

This tree tragedy will probably be written down as one of the major individual tree casualties of the hurricane which swept through New England on September 21 and injured or destroyed many famous trees. The great old elm at Wethersfield is the largest elm in America. The record shows it to have been planted in 1758. Its beautiful branching form was the result of a storm—a heavy ice storm when it was about ten years old, which broke off the top and caused it to spread out in its six magnificent branches.

The Wethersfield Elm is ninety-seven feet high, with a spread of 165 feet and a trunk diameter of twenty-eight feet. Its largest limb measured seventeen feet in circumference but, fortunately, the hurricane did not take this down. Though shorn of two of its most beautiful arms, with proper tree surgery and care, the Wethersfield Elm will doubtless recover from its injuries and look down, in benign beauty, on many generations yet to come, despite its wounds of the never-to-be forgotten hurricane of 1938.

The salvage plan submitted to Washington on October 11, and immediately placed by Mr. Silcox before the Chairman of the Reconstruction Finance Corporation, had as its major objectives to get out the largest possible volume of logs within the shortest possible time, to help finance and protect the interests of the many owners, to keep administrative costs to a minimum, and to afford the best possible collateral for loans. Stripped of details the plan involved (1) securing an RFC loan; (2) establishing log prices on basis of markets and grades; (3) immediate payments to log owners, at designated delivery points, of not more than eighty per cent of the prices so established; (4) additional payments to owners if, as, and when administrative and other costs are covered and the loan is repaid; (5) measures to prevent demoralization of log and lumber markets.

While financial, legal, and procedural possibilities were being explored in Washington, conferences were being held with State Salvage Committees appointed by the various Governors, with representatives of the Farm Bureau Federation, the National Grange, the lumber industry, and organizations like the Vermont Timber Salvage Corporation, which had been formed to assist farmers and members in reducing losses to forests and timberlands damaged by hurricane.

There were many indications of the need to minimize speculation. Word came from New Hampshire, for example, that one owner, hard up, had been offered fifty cents a thousand for white pine—and had accepted it—while a neighbor had held out until he got two dollars on the stump. And a woodlot owner in Massachusetts revealed that the best offer he had received was from a mill that agreed to limb, buck, and log what seemed to the mill to be salvageable, leave the tops and debris for the owner to dispose of as best he could, and pay not one red cent for stumpage. "Big hearted of him," was the owner's comment, "but where and when can I do better than this?"

The answer came on November 4 when the Chief of the federal Forest Service announced that a plan had been approved by Jesse Jones, Chairman of the Reconstruction Finance Corporation, whereby government funds would be advanced on pine logs in the hurricane area delivered at ponds, lakes or other designated concentration points. The amounts advanced will be up to eighty per cent of the following prices: \$18 per thousand board feet for No. 1 clear logs 12 to 16 inches in diameter and 12 to 16 feet long, or defective logs 17 inches or more in diameter and 10 to 16 feet long; \$14 per thousand for No. 2 clear logs from 9 to 16 inches in diameter and from 10 to 16 feet long, or for defective logs 17 inches or more in diameter and 8 to 16 feet long; \$12 per thousand for No. 3 clear logs 6 to 8 inches in diameter and 10 to 16 feet long, or for defective logs 8 to 13 inches in diameter and 10 to 16 feet long.

The eighty per cent provision will hold until June 1, 1939. At that time prices for logs for later delivery will be subject to reconsideration.

"Logs will be sealed under supervision of representatives of the Forest Service when delivered," the announcement reads. "Advances of not more than 80 per cent of the value will be made by the non-profit Northeast Timber Salvage Administration within a week after logs are sealed at ponds, lakes, or other designated points.

"Further payments for logs will be made, upon

completion of the operation, on the basis of a pro rata share to each participating log owner of the proceeds of the operation after repayment of the loan with interest at three per cent, and after necessary administrative costs have been met. Every care will be made to keep the cost of administration as low as possible. To that end local and state committees are expected to cooperate in every possible way with the Timber Salvage Administration. Accounts will be kept separate by states and proration made on that basis.

"Farmers who are unable to finance their own logging may obtain loans through the Farm Security Administration and should contact its local representatives. Other timber owners needing financing should apply to their local banks or the Disaster Loan Corporation. Prices on species other than pine will be announced later.

"There will be set up a Timber Salvage Administration for each state, but the Forest Service has already established a New England Emergency Office in Boston. Mr. E. W. Tinker, Assistant Chief of the Forest Service, is in charge of hazard reduction and salvage programs. He has representatives in each state, working with state foresters and extension foresters."

Mr. F. A. Silcox, Chief of the Forest Service, has been appointed as an agent and vice president of the Federal Surplus Commodities Corporation. As "Administrator, Northeast Timber Salvage Administration (Federal Surplus Commodities Corporation)," he is empowered to administer the program, establish offices and administrative units, negotiate with the Disaster Loan Corporation for loans to be made by it to the Federal Surplus Commodities Corporation, and execute on behalf of the Federal Surplus Commodities Corporation such loan agreements, notes, and related instruments as may be required.

Anticipating these arrangements, the Salvage Section of the Boston office had drawn up log specifications, instructions and forms for sealing by the International 1/4 inch rule. Cooperating with the states, Town Salvage Committees had been appointed. With assistance from the Extension Service, their immediate work was to locate all salvageable material within each town, check on amounts and kinds, notify local and nonresident owners, take a similar inventory with respect to water storage possibilities, sawmills and sawmill sites, and determine such rights-of-way as might be needed to ponds and existing and proposed sawmills.

In the meanwhile, twenty-one experienced men arrived in Boston on November 1 from the western regions of the Forest Service to assist in handling logging operations. Working under state project directors, they started at once to inspect storage ponds and mill-sites, and to receive applications for sealing stations and tentative log delivery schedules from Town Salvage Committees which will make storage and mill-sites available, and arrange for delivery of logs.

The initial loan from the RFC has been received, and more funds are available as needed. Prices for hardwoods will be announced shortly. Experienced sealers are on the job. Pine logs are coming in. Uncle Sam's postmen are carrying checks in payment for logs delivered. Before long the Northeast Timber Salvage Administration must dispose of the logs—or process them and dispose of their products—without breaking the market. This may be a four or five-year job.

EDITORIAL



CHRISTMAS TREES AND CONSERVATION

BRIEF though its season of service is, the Christmas tree has come to be the forests' greatest contribution to universal inspiration of happiness and good will in America. No picture of joy can compare with that mirrored in a child's face when the lights of a Christmas tree are turned on. The joy of the child ascends to the parents and to all others, lifting people everywhere to spiritual heights of gladness and service that no other season or occasion can equal.

Of course, Christmas would still be Christmas without trees but what a dreary, funereal affair it would seem. Yet there are sincere and well-intentioned people who would ban the use of Christmas trees. Shocked by the sight of hundreds of them consigned to the ash heaps or burned in the streets following the Christmas season, they become alarmed by the thought that here is wanton waste of our forests. Their conservation, we think, carries them to extreme and illogical lengths. The use of trees for Christmas is as legitimate as their use as logs for our fireplaces, as pulp for our books and newspapers, as rayon for our clothes, or as lumber for our homes. If conservation called for denial of forest use, certainly the Christmas tree because of the good it does and the joy it gives should be at the bottom of the list of forbidden uses.

But forest conservation in this country does not call for the denial of forest use. We are in no immediate danger of a shortage of Christmas trees or other forest products. Our markets are chronically over-supplied. Our danger, already real in many communities, is rather from forest land bankruptcy growing out of lack of forest use. Throughout the country are millions of acres of once forested lands that today are not growing forests. They yield no income to their owners, provide no employment for the local people and produce no needed taxes for the upkeep of schools, roads and other community needs. They are tax delinquent or idle because public demand for forest products offers insufficient incentive to timber growing.

Conservation's largest purpose is to restore these lands as productive assets to the community and to the nation. This purpose is best served not by discouraging or denying the use of forest products, but by encouraging their use to the end that larger markets will spur people to grow trees and keep continuously productive the forest lands of the country. Declining markets brought about by restrictive mandates or any other factors, therefore, aggravate the most difficult problem which conservation is seeking to solve.

No one knows the number of trees that enter into our annual Christmas festivities. The federal Forest Service estimates it at ten million. We are inclined to think that the number is double that figure especially if the present use of living trees is taken into account. Accepting the larger figure of twenty million trees, any one of our states outside the prairie belt has ample forest land not now used to grow all the Christmas trees the nation needs. And the more it needs and uses the more forest lands will be devoted to the continuous production of Christmas trees under approved methods of management and harvesting.

Any voice raised against the little Christmas tree should be raised not against its use but against the manner of its cutting and harvesting. Even here one is not on safe ground in assuming that all Christmas trees are cut in violation of good forest practice. Great numbers come from the tops of trees cut in lumbering operations which otherwise would be left to rot or burn in the woods. Increasing numbers too are now coming from privately operated plantations where trees are grown on short rotations expressly for the Christmas trade. Many trees represent thinnings from natural forests which benefit the trees left. And finally the use of living trees at Christmas time has grown by leaps and bounds in recent years. Any attempt to stop such cutting by boycotting all Christmas trees therefore violates not only common justice but the whole spirit of Christmas by penalizing the good manager for the shortcomings of the bad manager.

Conservation zeal is a fine thing provided it is directed along reasonable and constructive lines; otherwise it may prove harmful. So it is with well meant pleas to outlaw the Christmas tree. Such interest in conservation could be turned to better account by creating a public demand for certified Christmas trees, the certificate being evidence that the tree has been cut under improved forest practice; or by promoting greater public care with fire in the woods. Certified Christmas trees are now available in some markets and a public demand for them would tend to discourage operators who are stripping the land for small trees, while better forest fire prevention would save many times over the number of trees cut for the Christmas season.

These are positive efforts which keep conservation in its rightful place of meaning more not less Christmas trees and the perpetuation of a custom that quickens human joy, good will and spiritual consciousness everywhere. These are things that America and the whole world need desperately.

THE STORY OF MISTLETOE

(Continued from page 551)

ferring to the sticky nature of the berry.

In the time of early England, the mistletoe was endowed with supreme magical and medicinal properties. It seems to have been a panacea for all ills. A wine made from its berries was held in peculiar esteem for its all-healing power and as an antidote for poisons and for apoplexy. By the Druids, it was considered of utmost value as a cure for epilepsy, and especially valued for warding off vermin and diseases in general. Formerly it found a big place in the witches' materia medica—small wonder—and the witches did a thriving business with it. Oddly enough, mistletoe, as well as being used by the witches, was also a sacred plant and a talisman against witches.

Among the early Christians, mistletoe was regarded as a specific remedy for old age infirmities. Old medical writers considered it a cure for barrenness, and childless women in some parts of Japan still use it in all good faith. They also chop up the plants and sow them with seed to increase soil-fertility. Although mistletoe may have some active pharmaceutical properties, its formerly reputed value for medicinal purposes has long been discredited.

In the United States, the family is well represented by two genera, *Phoradendron* and *Razoumofskya*, also called *Arceuthobium*.

Phoradendron is exclusively an American genus, found on both hardwoods and conifers, but mainly on hardwoods. There are about 200 species of *Phoradendron*, parasitic and shrubby, almost all leafy, many of them of more or less decorative value. They are far from uniform in habits of growth, size, leaves, flowers, or fruit. *P. macrophyllum* has broad leaves of a more golden color, *P. villosum rotundi folium* very round leaves, while *P. densum* has small, narrow leaves. The desert mistletoe, *P. californicum*, and the juniper mistletoe, *P. juniperinum*, have leaves reduced to mere scales. *P. californicum* forms long, pendant tufts and straw-colored berries somewhat tinged with red; some tropical species, as *P. chrysocarpum*, have white or yellow berries while *P. rubrum* has red and occasionally yellow berries, and *P. emarginatum*, a berry with a warty surface. Most of the species are smooth, but in some, *P. tomentosum*, the plant is velvety-tomentose. Some species of these mistletoes, even though parasitic themselves, serve as hosts for other mistletoes of the same genus.

Razoumofskya is found exclusively on conifers. They are small and even more degenerate than our common leafy mistletoes. Their only leaves are mere opposite tiny scales, arranged flat against the rectangular stem, which makes this genus completely parasitic since it derives all of its nourishment, as well as its water and minerals, from the host plant. There are about a dozen species of this genus in the United States.

Several species of *Razoumofskya* are especially common in the West, and have become problems seriously affecting the lumber industry. *R. cryptopoda* is one of the worst, being found wherever ponderosa pine grows. This particular species blooms in April and May, but the fruit matures in the early fall of the following year. Like all the other species of this genus, the gelatinous seeds, when mature, are suddenly and forcibly ejected upwards to a distance of several yards, often landing and sticking on nearby trees. Extended observations indicate that all the aerial portions of both the staminate and the pistillate plants die and fall away after one season of flowering and fruiting.

There are distinct species of these scaly mistletoes for the western larch, the lodge-pole pine, western yellow pine, Douglas fir and tamarack. They kill many young trees and the growth of older trees is often so retarded in diameter and height, as well as in display of leaf surface, that ultimately death results.

Phoradendron flavescens appears in southern parts of New Jersey, eastern Pennsylvania, central Ohio, southern Indiana and Illinois, and southward from New Jersey to Florida, along all of the Gulf States to New Mexico and east through eastern Kansas. It is widely distributed throughout its eastern and southern range. In California and in the Pacific Coast states are species closely related to and resembling this form.

It infests numerous species of broad-leaved trees. Unlike its European cousin, *Viscum album*, it shows a strong attachment for a variety of oaks, as well as for maple, honey locust, tupelo sycamore, elm, mesquite, hackberry and cottonwood. It apparently does not attack evergreens although some of its close relatives with which it is frequently and easily confused have been reported on cedars, pines and firs. Extremely luxuriant in portions of the South, its queer evergreen, parasitic, dense growths give a peculiar, pleasing touch to the orchards and forests in mid-winter when they are conspicuous among the naked branches of the trees. The leaves are about two inches long, obovate, thick, leathery, very firm, and arranged oppositely in pairs on the branches. They remain on the plant after the leaves of the host have fallen. The tiny, rather insignificant yellow flowers are dioecious—male flowers and female flowers always on separate plants—and grow in short, crowded grape-like clusters, often appearing as early as February and March. They have a globular three-lobed calyx within which are borne the sessile two-celled anthers as numerous as its lobes in the staminate flower. In the fertile flower the calyx adheres to the single ovary, which is one-celled and one-seeded.

The male plant with its staminate flowers is absolutely necessary for cross-pollinating and fertilizing the flowers of the

female plant. Immediately after they have served this function they dry up and disappear. The fertile flowers are followed by tight clusters of berries that ripen in September or October, and hang on tenaciously for months. The berry is pearl-white, translucent, about the size of a currant and filled with a mucilaginous pulp which hardens upon exposure to the air.

Since the leafy mistletoe is green, it unquestionably can and does have the ability to do its own work of food manufacture, just as other green plants. Why, then, is it parasitical on other plants? Just what does it derive from its host? Obviously, it needs the same raw materials for food as other green plants. Because of its inability to grow in the ground, the green, leaf bearing forms must secure from their host only what any normal plant derives from the soil; namely, water and certain necessary soil constituents. Otherwise, the mistletoe is equipped with apparatus for starch manufacture. Both leaves and stems have a superabundance of chlorophyll—green substance—and its leaves are beautifully constructed for taking in carbon dioxide directly from the air. Therefore, the mistletoe can make all its own necessary carbon-compounds, organic food-substances, but also depends upon its host for certain very necessary inorganic substances, which it is not able to absorb from the earth.

There is another important fact which substantiates the theory that the mistletoe receives only part of its elaborated foods from its hosts. If the roots of the mistletoe would stop increasing in length after reaching the food conducting zone of the host stem, no leaves on the parasite would be necessary, since the sap in that zone contains food prepared and ready for use. But, the roots of the parasite do not stop there. They penetrate straight through this food-conducting belt. They stop only when they reach the region of the sapwood, where they find and derive the chief substance which the parasite requires; namely, crude-sap, on its upward journey from the soil to the leaves. That it does take food from its host, however, is indicated by the ultimate death of the stem beyond the infection.

A most peculiar kind of seed-dissemination is seen in the mistletoe. The pale juicy berries, conspicuous by their color, their dense clusters and their prominent position on the plant, attract birds. Because of its special fondness for these berries, a species of thrush in Europe, is known as the "mistle-thrush" or "missel-thrush." Great flocks of hungry blue-jays, red-birds, thrushes, mocking birds and blackbirds love the fruit, especially since it is plentiful in mid-winter when little else can be found. The juicy pulp is digested but the tiny seed, swallowed along with the pulp, is surrounded by a

(Continuing on page 570)

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AROUND THE STATES

OFFICIALS BLAMED IN DEATH OF CCC FIRE FIGHTERS

A six-man jury of woodsmen on November 12 held that "laxity" and "negligence" on the part of CCC officials "but without any intent on their part" contributed to the death of eight Civilian Conservation Corps enrollees in a northern Pennsylvania forest fire on October 19. The victims, with their leader, a member of the State Department of Forests and Waters, were trapped in a gully on Pepper Hill in Cameron County, where four blazes broke out simultaneously. These fires, incidentally, were found by the jury to be of incendiary origin, set by "some person or persons unknown."

The jury reported in part as follows: "It is the consensus of opinion of this jury that no one individual was more responsible for the death of the deceased than any other individual, but that William E. Houpt, Adolph Kammrath, Lieutenant Rodman Haynes, Earl F. Getz, William E. Schooley, and the camp physician, in one form or another, were lax and negligent in the performance of their duties and that such laxity and negligence contributed to the death of the deceased, but without any intent on their part . . ."

The jury further declared that "it was

a laxity on the part of the superior officers of the above designated local officials of Camp S-132 at Cameron, Pennsylvania, by reason of their failure to have fire fighting regulations in the hands of the local camp commander prior to the time of the tragedy and in not having made proper inspection and inquiry as to the training of enrollees in forest fire fighting.

"We believe some responsibility also rests upon the superior officers of both the United States Army and the technical service." The jury reported that regulations and instructions on forest fire fighting by CCC enrollees were "promulgated on April 20, 1938, but by ruling, such regulations do not become effective until they reach the hands of the camp commander, yet such regulations did not reach the hands of Lieutenant Rodman Haynes, camp commander, until October 21, 1938, a period of two days after the tragedy."

The jury recommended "future orders relating to forest fire fighting be dispatched more promptly and with more definite orders to camp commanders."

It was further brought out by the jury that enrollees had not been trained in forest fire fighting since July 1, 1938.

RUTLEDGE TO HEAD GRAZING DIVISION

Richard H. Rutledge, for the past eighteen years Regional Forester of the Forest Service with headquarters at Ogden, Utah, has resigned to accept an appointment offered him by Secretary Ickes of the Interior Department to head that Department's Division of Grazing. Mr. Rutledge will succeed Farrington R. Carpenter, who has been Director of the Grazing Division for the past four years and who has resigned to retire to private life. Mr. Carpenter was the first Director of the Service, taking office following enactment of the Taylor Grazing Act in June, 1934. Emphasizing that there will be no change in policies in the operation of the Division of Grazing, Secretary Ickes in announcing the appointment of Mr. Rutledge paid tribute to the work accomplished by the Division of Grazing while directed by Mr. Carpenter.

Mr. Rutledge will bring to the grazing work of the Interior Department the services of an authority on public land graz-

ing. He has been considered one of the strongest Regional Foresters in the Forest Service, to which he has given most of his life. Born in 1873, he attended the University of Idaho, following which he taught school and engaged in stock grazing and farming. Entering the Forest Service in 1905 as a forest ranger, he advanced upward to the highest field position of Regional Forester.

"In taking over the Public Domain work," Mr. Rutledge said, "I am not fooling myself as to the problems ahead, but feel that with the willing help of the stockmen and of the people of the West that has been so evident during my Forest Service work, any problem arising can properly be solved." The Division of Grazing of the Interior Department is responsible for the conservation and regulated use of forage resources on 120,000,000 acres of public lands outside the National Forests in the eleven western states.

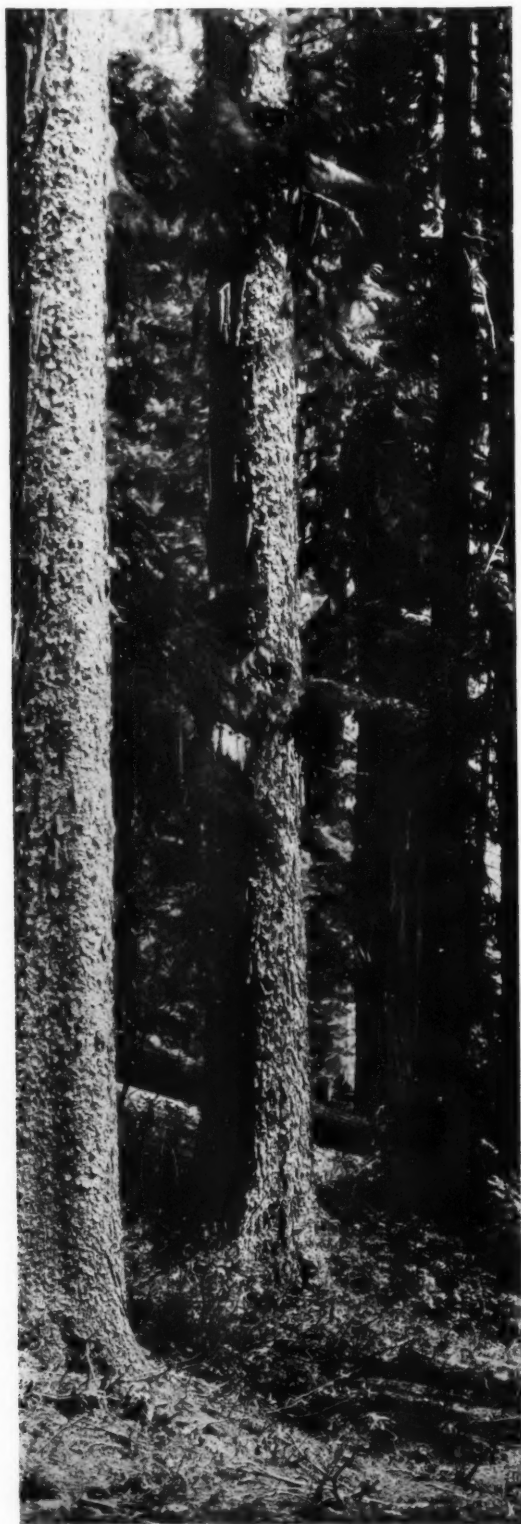
WALLACE REQUESTS REVISED DUTCH ELM APPROPRIATION

An immediate revision of departmental estimates for regular funds with which to carry on eradication of the Dutch elm disease and prepare for their submission to the Bureau of the Budget was requested by Secretary Henry A. Wallace, of the Department of Agriculture, on October 28, following a conference with representatives of the National Conference on Dutch Elm Disease Eradication. A

group of citizens, led by Chairman William P. Wharton and Dr. J. H. Faull of the Arnold Arboretum, informed the Secretary that the regularly appropriated funds of \$378,489 are inadequate for the efficient administration of the current allotment of \$1,932,000 of WPA funds, whose availability expires on February 28, 1939.

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In like manner, tests have proved that many forest areas today yield less usable timber than if harvested years ago. The volume of useful timber in over-ripe forests rapidly declines with the passing of time. Mature, over-ripe trees decay and die in common with all plant life. Thus, much potentially valuable building material is wasted. While this loss in itself is great, unharvested ripe timber causes further waste in our natural timber resources by holding back new growth.

Therefore, if we fail to harvest the mature trees we not only lose valuable timber through deterioration, but also retard newer growth which otherwise would more quickly replace original timber.

Today mature timber harvested for use as lumber, insulation, pulp and other forest products is greatly accelerating needed new growth. This stimulated growth of young trees plus the slower natural growth in uncut areas will easily exceed the amount of timber cut to supply the country's needs. Modern scientific logging methods insure for America a plentiful supply of economical building materials.

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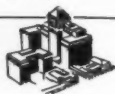
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ease into Dutchess and Ulster Counties, New York, and across the Delaware River into Pennsylvania, the Secretary was told, make necessary vigorous continuation of the eradication work if further expansion of the disease is to be stopped and the elms saved. There is still a fighting chance to save the elms, providing adequate funds are available, said S. A. Rohrer, Acting Chief of the Bureau of Entomology and Plant Quarantine, responding to a question from the Secretary. To do so, Mr. Wharton supplemented, will require an enlarged force of well trained, permanent workers which can only be employed with regularly appropriated funds. With such an organization, he said, the available force of WPA workers can be given useful employment that will bring about the desired eradication of the disease.

The group also presented a similar message to representatives of the Works Progress Administration, and to the Acting Director of the Bureau of the Budget, Daniel W. Bell.

After consideration by the Bureau of the Budget any revision of the figures for Dutch elm disease eradication will be

submitted to President Roosevelt. The final figures as approved by the President will be included in his annual budget message to Congress early in January, and will be the basis on which the departmental appropriation for the fiscal year beginning July 1, 1939, will be considered and acted upon.

Attending the conferences, in addition to Mr. Wharton and Dr. Faull, were Edgar Rex, Supervisor of Plant Pest Control, New Jersey Department of Agriculture; Dr. A. B. Buchholz, Director, Plant Industry Bureau, and Dr. W. H. Rankin, Supervising Horticulturist, New York State Department of Agriculture and Markets; W. O. Filley, Forester, Connecticut Agricultural Experiment Station; Dr. C. E. Temple, University of Maryland; J. Hansell French, Pennsylvania Secretary of Agriculture; Dr. G. T. French, Virginia State Entomologist; Hollis Howe, Baltimore City Forester; Norman Armstrong, Secretary of the National Society of Arborists; Harris A. Reynolds, Secretary of the Massachusetts Forest and Park Association; and G. H. Collingwood, Forester, The American Forestry Association.

WOULD KEEP OLYMPIC PARK A WILDERNESS

Asserting that the new Olympic National Park in the State of Washington should be maintained and administered as a wilderness park, the Federation of Western Outdoor Clubs at its fall meeting at Mount Hood, Oregon, declared itself opposed to the granting of further commercial concessions within the park for hotels, gas stations, restaurants, etc., and the further penetration of the region by roads. Such developments, it held, will serve to destroy the present wilderness character of the park.

The Federation also went on record in favor of an addition to the park of a northern area containing Hurricane

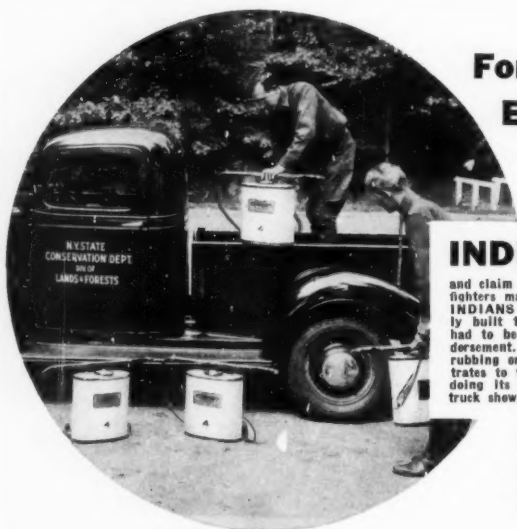
Ridge, Deer Park "and other regions of superlative scenic character."

Twenty-five outdoor clubs in the states of California, Oregon, Washington and Montana constitute the Federation, of which Paul J. Thiess has been president during the past year. New officers elected at the Mount Hood meeting are: president, Arthur H. Blake, San Francisco; secretary-treasurer, Aaron H. Glasgow, Spokane, Washington; vice-presidents, Charles Boyer, Oakland, California; Dr. Floyd L. Utter, Salem, Oregon; Fairman B. Lee, Seattle, Washington; Lynn Ambrose, Missoula, Montana.

INCREASED APPROPRIATIONS FOR FIRE CONTROL URGED

An increase of \$500,000 to the current appropriation of \$2,000,000 for cooperative forest fire protection under the Clarke-McNary Act was urged before Acting Director Daniel W. Bell of the Bureau of the Budget by a group led by State Foresters Frank Heyward, Jr., of Georgia, and Fred Pederson, of Virginia, on October 29. In support of their request, figures were submitted from the several cooperating states showing that the present appropriation will be supplemented by nearly \$7,000,000 of funds from the states and from private timberland owners. In further justification of larger Federal appropriations, data was submitted showing that three-fourths of forest fires today are attributable to carelessness by the general public.

Others attending the meeting were John B. Woods of the National Lumber Manufacturers' Association, E. R. Edgerton of the Timber Products Bureau of Spokane, Washington, Henry Clepper of the Society of American Foresters, and G. H. Collingwood of The American Forestry Association.



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WILDLIFERS TO MEET IN DETROIT

The fourth North American Wildlife Conference will be held in Detroit, Michigan, the week of February 13. The Conference, which is sponsored and managed by the American Wildlife Institute, is the annual occasion for workers and authorities in the field of wildlife conservation to discuss important questions.

The Detroit Conference will also be the occasion for the annual meeting of the National Wildlife Federation, of which J. N. "Ding" Darling, noted cartoonist, is President. Wildlife authorities throughout the United States, Canada and Mexico are expected to attend and to take part in the Conference.

WESTERN FORESTRY CONFERENCE

Representatives of private and public forest agencies of the Pacific Coast will meet in Portland, Oregon, December 15 and 16, to co-operate in solving their most pressing problems. Private forest enterprise in the redwood, fir and pine regions of California, Oregon, Washington, Idaho and Montana will be represented by lumbermen's organizations and tim-

berowners' protective associations. From the same regions will be officials of state forest and land departments and of federal agencies such as the Forest, National Park and Indian Services, General Land Office, Weather Bureau, forest experiment stations, insect and disease authorities. British Columbia will also be represented by government and industry.

NEW OFFICERS NOMINATED

Shortly after December 1st, members of The American Forestry Association will receive their ballots for the annual election of officers of the Association. The ballot will include nominations for President, twenty-one Vice Presidents, Treasurer and three directors.

The Committee on Elections this year consists of F. C. Pederson, Philip W. Ayres and S. B. Detwiler, Chairman. The slate nominated by the committee is as follows:

For President: Mr. James G. K. McClure, President, Farmers Federation, Asheville, North Carolina.

For Vice-President: Mr. Goodwin B. Beach, President, Connecticut Forest and Park Association. Mr. John W. Blodgett, Jr., Chairman, Wright-Blodgett Company, Limited. Mr. Jay N. Darling, President, National Wildlife Federation. Mr. Otto C. Doering, President, Izaak Walton League of America. Mr. Newton B. Drury, Secretary, Save-the-Redwoods League. Mr. William L. Finley, Naturalist. Mr. James Montgomery Flagg, Artist. Mr. William L. Hall, Consulting Forester. Dr. C. F. Korstian, President, Society of American Foresters. Mrs. H. E. Kyorlie, Chairman of Conservation, General Federation of Women's Clubs. Mr. Julian F. McGowan, W. T. Smith Lumber Company. Mr. H. Gleason Mattoon, President, Pennsylvania Forestry Association. Mr. L. F. Murray, President, West Fork Logging Company. Mr. Arthur Newton Pack, Director, Charles Lathrop Pack Forestry Foundation. Honorable Gifford Pinchot, Former Governor, Pennsylvania. Dr. Edmund Secrest, Director, Ohio Agricultural Experiment Station. Mr. James G. Stahlman, President, American Newspaper Publishers Association. Mr. James J. Storrow, Jr., Treasurer, Society for the Protection of New Hampshire Forests. Mr. Tom Wallace, Editor, Louisville (Kentucky) Times. Mrs. Kemble White, Chairman, Conservation Committee, National Council of State Garden Clubs. Mrs. Andrew Murray Williams, Chair-

man, Conservation Committee, The Garden Club of America.

For Treasurer: Mr. George O. Vass, Vice-President, Riggs National Bank, Washington, D. C.

For Directors: For five-year terms: Colonel Joseph Hyde Pratt, North Carolina Forestry Association. Mr. Wilbur K. Thomas, Secretary, Carl Schurz Memorial Foundation. Colonel William B. Greeley, Secretary-Manager, West Coast Lumbermen's Association.



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Western Timber Lands

Mistletoe

(Continued from page 564)

stony coat and passes through the bird's digestive tract intact and unharmed. The semi-fluid "droppings" not only embed the seeds and help them to find lodgment upon new branches frequently miles away but are often washed down the sides of the branch carrying the tiny seeds with them. This explains how mistletoe may get started on the sides and even on the underside of limbs of trees.

Also, the mucilaginous quality of the berry causes many seeds to adhere to a bird's bill or feet as he peeks about in the tight clusters. To get rid of this annoyance, he never fails to wipe it off, almost invariably on a clean branch. Thereupon the glutinous pulp, exposed to the air, hardens, thus firmly anchoring the seeds to the bark just where nature intended them to be.

The seed remains glued to the branch through the snows and cold of winter, until early spring, when it sprouts and sends out a tiny root-like haustorium. This dissolves, or digests its way through the bark of the tree to the water conducting tissues where it is able to absorb what it needs. A slow grower the first year, it is not until the second spring that the seedling shows vigor. More and more haustoria are constantly formed.

The plant is succulent when young but as it grows older it becomes dry, brittle and woody, laying down each year a narrow, new ring of wood, like its tree host. As many as forty rings of wood have been found, indicating not only that the mistletoe itself was forty years old but that it had not killed the branch upon which it was living during all those years. In the end, however, the portion of the branch beyond the place where the mistletoe is rooted becomes starved and dies. Where too many bunches of mistletoe grow on a tree, it is only a question of time before the whole tree is killed.

Persons familiar with the traditional mistletoe only as a sentimental adjunct to Christmas merriment will, perhaps, be surprised to learn that in some parts of our country, as well as throughout large parts of Europe and Asia, it is considered a pest so insidious and destructive that friends of trees and owners of timber lands in the mistletoe sections are seeking methods of exterminating it, or, at least, of bringing it under control.

ASK THE FORESTER

Forestry Questions Submitted to The American Forestry Association, 919 - 17th St., N. W., Washington, D. C., Will Be Answered in This Column. . . . A Self-Addressed Stamped Envelope Should Accompany Your Letter.

QUESTION: How can one prevent the needles of Christmas trees from falling off?—E. A. S., Ohio.

ANSWER: At best one can only postpone the time when the needles will fall for the tree has been cut from its roots and has no natural source of moisture. Until it is ready to be set in the house and decorated the tree should be left outdoors where the sun cannot strike it, or in a shed, garage, barn, or cold room. When it is brought into the house it may be set with the base in a pan of water or in a tub of moist sand. This will furnish moisture for the needles and help them to hang on longer than otherwise.

QUESTION: Is it true that elms suffered most during the recent New England hurricane?—R. E. S., Washington, D. C.

ANSWER: It is impossible to say that certain trees withstood the wind better than others. Many elms were blown down but in the forests the majority of the down trees are white pine. Oaks, maples, tulip trees, coffee trees, locusts, spruces, firs, hemlocks, apples, hawthorns, and practically every kind of shade tree exposed to the full force of the wind suffered heavily. Forests containing mixtures of broadleaved trees and conifers suffered less than pure stands of pine. Many injured trees were badly in need of repair and were blown over or broken because of old cavities or weakened crotches. Other shallow-rooted trees like red maple, which normally grow where the water table is near the surface, showed heavy losses.

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THE BIRDS OF AMERICA, by John James Audubon. Published by the MacMillan Company, New York City, 526 pages. 500 illustrations. Price \$12.50.

When John James Audubon roamed this continent in the second quarter of the last century with the high purpose of recording faithfully the appearance and characteristics of all the birds in their grace and beauty, we were still a pioneer people. Now the wilderness has been crowded into fence corners. When the new and transitory things of man's invention are glorified it is essential to appreciate the beauty and joy in the world which is man's heritage. The thoughtful among our people have endeavored to preserve something of man's natural environment and to give sanctuary to its creatures. This book of Audubon's Birds has all the endearing quality of a family album. The exquisite beauty of color, line, mass, and detail of each of the 500 colored plates is a joy and satisfaction to study.

This is an edition containing in uniform size (9x12½) all of the original Elephant Folio which was the proud possession of less than two hundred people in 1840, and the sixty-five later plates of the birds of the Rocky Mountains. The descriptive text below the plates (which carry the original numbers), is written by Mr. William Vogt in accord with the Check List of the American Ornithologists' Union. Following the plates is a transcript of the legends of the original plates which gives the com-

mon and scientific names of the birds as Audubon knew or named them, the date of the painting and frequently plant identifications. Then following this is an Index which is very serviceable for cross reference as the names in current usage are given in roman type and the names Audubon used which are at variance are in italic type.

With the giving season approaching I cannot bring this excellent book too strongly before our nature loving AMERICAN FORESTS readers. It is a book of heirloom quality.—J. C. C.

SAGAS OF THE EVERGREENS, by Frank H. Lamb. Published by W. W. Norton & Company, Inc., New York City. 364 pages, illustrated. Price, \$3.50.

This book is an intimate and fascinating record of the evergreens—far-flung over the earth for millions of years—persisting through cataclysmic geologic changes. Already an authority on wood, the author circled the globe and visited the great forests of the world in the intensive study of forty years, out of which this book grew. In no sense a scientific treatise, neither is it a popularization of the subject but a store-house of accurate information from Grandfather Ginkgo, through the Sequoia, to the cedars, cypresses and pines. The history, cultivation and present use of this "brotherhood of venerable trees,"—illustrated by photographs from the four corners of the earth, is here woven into a book of which no lover of trees should deprive himself.—L. M. C.

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Forester, The American Forestry Association



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Since it is not overburdened with technical terms, "KNOWING YOUR TREES" is an ideal tree book, both for adults and for children. It will serve as an excellent companion either on woodland walks or in the library.

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Call of the Wilderness

(Continued from page 557)

dropping. And the lake reflects like a mirror—white, wandering clouds, dark, sedentary peaks.

Seventh Pass: Climbing to Buckskin Pass, the peaks surrounding the lake grow into personages—pyramid Peak, 14,000 feet up, towers higher and higher; North Maroon, 14,000 feet, becomes more rocky and purple each moment.

Trail leads to camp at Snowmass Lake where we have two days, two perfect moonlit nights. This serene lake is edged at west by sheer rocky cliffs reflected in the water like a fjord. Three snowy and granite peaks face our camp. We sing, with guitar and mouth-organ, and attempt some square—dancing under the moon. But these snowy mountains make a setting such as dreams are made of. Our human activity hardly seems actual when faced by the snow—fields and the massive peaks palely gleaming in the moonlight and reflected in the glassy lake. Their Presence is silence, unreality, remoteness.

Eighth Pass: We name it for ourselves, Trail Riders' Pass, in true discoverers' fashion, burying on the very top and with fitting ceremonies, a bottle full of the long roster of our forty-five names. Only a third of the party can alight on the ridge. The other two-thirds, all brakes set, are straining to remain on the steep slope without rolling backwards.

From Little Snowmass or Geneva Lake, we ride past an endless torrential waterfall, a twisty, hurrying, tumbling falls which never stops descending, zigging and zagging down the rocks like one of our own trails. Then through tall spruces, the blue or water spruce, magnificent single trees; through vistas of wildflowers, again incredibly numerous, such as would grow on the other side of the pearly gates—rudbeckia, sunflowers, making the slopes a gold through which the sun shines brightly and larkspur and daisies in great abundance.

Ninth Pass: On a very wet morning, quite sodden and sullen looking, clouds wreath about the peaks and rain falls in spurts. A wind makes things colder and puts a breath of autumn in the air. Sky is glowering. Landscape is more wild, barren and dour than heretofore. Some say it is like the Scottish downs. A rocky trail, surrounded by good old "ordinary" mountains, leads us to Coyote Pass, a double-header. We are given no spectacular, vision-straining exhibits today, but a bit of hard going, some really rough travel, chill and sobering.

Tenth Pass: From a wet camp on Avalanche Creek, we enter the last and perhaps the most beautiful trail of any day; up towards Avalanche Lake, through forest, then over a meadow way to a high, beautiful park where we either rest luxuriously or run around taking pictures in brilliant sunshine;

then on over Capitol Pass, with stupendous views, to Capitol Lake, a gorgeous blue-green gem of water set in rugged and rocky surroundings. There, somehow, one wishes to linger always. For suddenly, we are in that mountain heart which we have heretofore skirted. Capitol Peak, 14,000 feet high, is at hand. It looms up beside the trail, beside the lake, a living and formidable Presence, granitic, huge, indestructible. The solid rock appears quite unapproachable except to eagles, two of which we see soaring gracefully, powerful and silent, about halfway to the crest. And it is true that few humans have ever set foot on the brow of this peak. Dramatically, it seems to be about to reach out for us as we, tiny moving spots, ride slowly down the trail to the lake.

After staying here as long as possible, we descend in the late afternoon,

facing tremendous blue vistas between huge spruce trees, a long, long wooded way down, to more civilized country, mild little aspen woods, a road, a last breathless canter into the last camp at a ranger station twenty miles from Aspen, thirty-eight from Glenwood Springs.

The horses, having behaved in superhuman perfection during the long, hard trip over the highest and hardest mountain trails in the land, are released together and somehow know they are at journey's end. They indulge in a rolling contest. Then, tearing out to the pasture on the other side of the irrigation ditch—to these ignominious waters have we descended from our rushing and remote mountain torrents—even the thinnest and sorriest nags kick up their heels, turn kittenish, stretch out their necks in joy, and lengthen out in a streaming run to pasture.

GOD'S GLEANERS

(Continued from page 538)

turkey alone eats the bitter gallberry. Robins do not, though millions of them through the woods in winter where the gallberry abounds. The seeds of the thistle are the delight of the goldfinch, and used to be of the vanished Carolina parakeet. What is true of birds is true of animals in the matter of their choice of delicacies. The beautiful big fox squirrel would rather have pine mast than all the nuts in the world; and in the spring, if you would like to see these exquisite creatures, all you have to do is to visit a redbud maple tree. In March, this squirrel practically lives on these buds.

Of all American game birds, while the wild turkey is the largest, the ruffed grouse is the most patrician; and, though a gleaner, he enjoys a princely diet. In the summer he takes his share of grasshoppers and crickets and other insects; but his more regular diet is somehow related to the character of the bird itself; for it is primarily of the wilderness. The berries of the greenbriar, the hips of the wildrose, the delicate fruit of the teaberry and wintergreen; frosted foxgrapes, sumac berries, seeds of the magic jewel weed, apples that lie under trees beside long deserted mountain homes, — all these this aristocrat enjoys.

I never think of farmlands in America without thinking of perhaps their very bonniest wild inhabitant. I mean the bobwhite, the quail, or the "partridge" of the South. One and all are the same bird. To hear his clear-ringing whistle from a thicket-edge or from a tree or from the top of a fence-post somehow brings back memories of the old farm and childhood days.

I say that the quail is beneficial because he destroys so many harmful insects and the seeds of noxious weeds. His damage to crops is entirely negative; for he is a humble gleaner after the farmer has made his harvest. I have watched quail eating dewberries, and making graceful little springs into the air to reach low-hanging blackberries. They also love strawberries

and raspberries; and I have seen a cock partridge, having mounted a wild cherry tree to whistle and probably to enjoy the scene that his elevation afforded, deign delicately to eat the acid black fruit of that tree. Among the weed-pests destroyed by quail are more than eight varieties of the lespedeza, beggar lice, foxtail grass, crabgrass, wild witch grass, seeds of the jewel weed and ragweed. There are scores of others, but these serve as examples.

Perhaps the most fastidious child of nature is the raccoon, which scrupulously washes his food before eating it. Once, from a hollow in a big fallen live oak limb, I captured four baby raccoons — funny little philosophers, looking at life, even in their infancy, like sages. Putting them in a wired pen, I undertook to make pets of them, offering them almost every kind of food. But not a morsel would they touch. Day by day they sat there, looking at me wistfully with their peaked faces pathetic, until eight full days had passed.

Then a thought struck me like lightning: A raccoon will never eat his food until it is washed! I had forgotten the babies' water. As soon as it had been supplied, every infant thoughtfully selected a piece of food, paced sedately over to the water-pan, and washed it carefully before eating it. Those babies were going to starve to death rather than disobey a law of nature! I observed, however, that they did not wash peanuts. Fed to them in the shell, they took off the shells and ate the nuts, evidently having sense enough to know that food with the natural husk on is already clean.

Nothing is more remarkable about the creatures of nature than their temperance. Normally, not one ever eats, drinks, sleeps, or plays to excess.

The millions of robins that winter in the South fly, in bands of many thousands, from swamp to swamp, feeding on the berries of the gum, the holly, and the sparkleberry. All these trees hold their fruit for the greater part of the winter.

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Is there not some special provision by nature here to provide these migrants with abundant food through the colder months? The robin in the North spends much of his time on the ground or near it. In the South he reverses his habit, living often in the tops of the tallest trees. There he finds most of his food.

Of the great migratory game bird family, the wild duck is a most interesting gleaner. The food taken varies with the species of duck. The beautiful wood duck would rather eat water oak acorns than anything else. But he also loves the seeds of the lotus, the big acorn-like fruits of the gum, and the seeds of the waterlily. Other ducks, such as the mallard and the blackduck, the teal and the widgeon, love rice, both wild and cultivated, acorns, wampee, widgeon grass, and both the fruits and stems of most aquatic plants. They will pull up waterlilies in order to get the potato-like protuberances on the roots.

While some birds feed in the highest trees, some on the ground and some under water, there are those which feed on the wing. The purple martin does so, and the chimney swift, the nighthawk, and many kinds of swallows. Most feed by day, but some by night, such as the owl, the night herons, and several other waders. Indeed, if one studies wild birds and animals with the question of their food in mind, he will discover that they use practically every method of procuring it except our method. They are wild. They are

joyous and free. The gleaners of God, they search the field and the forest, the waters and the sky, the ground, the shrubs vines, and trees for what a merciful and all-foreseeing Providence provides them.

All that I have said would lack for many readers a personal appeal unless I emphasize the fact that wild creatures can best be attracted by what they love to eat. Any one who has even a small garden and a few trees can attract many native birds of lovely plumage and beautiful song. They love seasonal fruits, seeds and berries. And you do not have to plant wholly for them. Plant for yourself, and let them be the gleaners.

I have made no attempt to write with mere scientific accuracy about the gleaners of God; for always it seems to me that, in the study of nature, unless we catch the vision of the Creator behind His mighty works, all our learning is but knowledge. Fain would I win, and fain draw you, to the elder dignity of wisdom. And perhaps no consideration of the natural world is more certain to hearten the average human being, affording him a communion with all life in our universal struggle for existence, affording him likewise an ennobling view of creation, with implications everywhere of the love and provision of the Supreme Being. Consider the lilies of the field. Consider likewise the gleaners of God. If you have not been able to find Him, meditation, and a justly thoughtful consideration of them may lead you to Him.

DESERT CHRISTMAS TREES

(Continued from page 544)

Santa Claus did not come; nevertheless our point here is again made—that desert folk will decorate any kind of a tree with almost any kind of thing.

My friend, David S. Warren, a skilled artist, heard me laughing at the cowboys' pranks, and declared the tree might really have been pretty, after all. To prove it, he decorated a cactus growing down near the Phoenix municipal garbage dump, using only such ornaments as the great dump heap afforded. Then he did another in a rusty tin can motif alone.

The former still looked like junk to me, but other artists said it was artistically sound. The second one honestly was quite pretty, with its carefully arranged pattern of rust-brown and cactus green, against blue sky. The newspapers got interested, and photographers were sent out to record the junk heap trees, but ruffian small boys in the neighborhood had destroyed both works of art, which perhaps was appropriate enough, since Christmas is for children anyway.

The regional motif was promptly adopted the following year by department store window trimmers, so that last season great artificial cacti and yucca and century plants turned up in the show windows as Christmas trees. They were striking, too; clever and droll. In one big store Santa Claus appeared beside the cactus tree wearing a wide-

brimmed Mexican sombrero. This wouldn't do. American sentiments are such that you can take liberties with Christmas trees, but you dare not take many with Santa Claus! The old Saint Nick is a saint indeed, and is not to be tampered with. Both children and adults complained, and the Mexican Santa was promptly changed back to the conventional fellow, reindeer, sleigh and all, despite the absence of snow on the desert.

That same week, a neon sign artist deposited a twenty-foot saguaro cactus—made of tin and glass and very life-like—at the busiest street intersection in downtown Phoenix, and converted it into a Christmas tree.

Short articles about cactus Christmas trees were sent out over Associated Press and other wire news services two years ago, and last year two alert business men turned up in Arizona to ship out twelve carloads of cactus for Christmas sale.

"We want trees averaging six feet high," they explained. "These sell best; for about \$1.50 retail. Next year we expect to ship trainloads out, if the new tree becomes popular."

These gentlemen had made a business of cutting fir and pine in the Pacific Northwest, shipping trainloads out soon after Thanksgiving each year. They knew their business, there.

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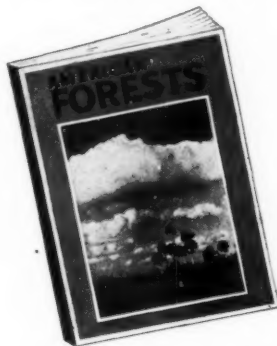
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This Christmas with each new gift subscription to AMERICAN FORESTS we will send to the recipient, or to yourself, a free copy of *KNOWING YOUR TREES*, by G. H. Collingwood. Within a short space of time this new tree identification book has become an Association "best seller". It contains actual photographs of each tree — of the full tree, and of the leaf, bark, flower, and fruit. In addition to these really outstanding photographs, it contains 500-word descriptions of fifty of our best known American trees—the natural range, commercial uses, and identifying characteristics peculiar to each tree.

Any person who enjoys the out-of-doors will find this book an excellent companion, either on their woodland walks, or in their library. Publication costs of "KNOWING YOUR TREES" make this offer possible for new members only — not for renewals.

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THE AMERICAN FORESTRY ASSOCIATION

919 - 17th Street, N. W.
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1938.

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**Index to
ADVERTISERS
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| | PAGE |
|--|-----------|
| Aiken Nurseries, The..... | 3rd Cover |
| American Telephone and Tele- graph Company..... | 2nd Cover |
| Austin-Western Road Machin- ery Company..... | 4th Cover |
| Bartlett Manufacturing Com- pany..... | 568 |
| Bausch and Lomb Optical Com- pany..... | 569 |
| Beebe Brothers..... | 571 |
| Caterpillar Tractor Company..... | 531 |
| Chalfonte-Haddon Hotel..... | 568 |
| Fechheimer Brothers Company..... | 573 |
| Fiala Adventure Shop..... | 573 |
| Gravem, Roy..... | 569 |
| Herbst Brothers..... | 570 |
| Hough Company, Romeyn B..... | 573 |
| International Harvester Com- pany, Inc..... | 565 |
| Keene Forestry Associates..... | 570 |
| Knapp Company, Fred C..... | 570 |
| Loring, J. Alden..... | 573 |
| National Tuberculosis Associa- tion..... | 574 |
| Norton & Company, W. W..... | 566 |
| Pacific Marine Supply Com- pany..... | 571 |
| Raleigh Hotel..... | 574 |
| Randolph, L. F..... | 571 |
| Rieh, C. H..... | 571 |
| Smith & Co., D. B..... | 568 |
| Stoeger Arms Corporation..... | 573 |
| Victor Tool Company..... | 570 |
| Warren Axe and Tool Company..... | 570 |
| Western Maine Forest Nursery..... | 570 |
| Weyerhaeuser Sales Company..... | 567 |



"Well, sirs," the Arizona contractor told them, "I can find some cactus growth on private lands, all right. But one six-foot saguaro may weigh darn near a thousand pounds! And that ain't all—it'll be bristling with bayonets as thick and sharp as darning needles. I figure I can load them on freight cars for about \$3 a tree."

That settled that. The gentlemen had seen children carry around their six-foot firs, and while they reasoned that caeti would be heavier, they did not guess how much. Actually, a saguaro is a living water tank.

Its sides are pleated, like an accordion, and these swell out with water in wet days on the desert, to carry the tree through long months of absolute drouth. It is a recorded fact that a healthy saguaro can live, grow, blossom and bear delicious nourishing fruit every year for four consecutive years, without receiving a drop of rain or any help from man.

Where else on this continent is a tree so amazing?

Evergreens

(Continued from page 541)

Holly, for instance, invites sylvan spirits to bless all indoors. (The notion has Roman or Teutonic backing; or, maybe, has both.) Mistletoe, parasite, born of decorum innate in the birds (good table manners demand that small birdies should wipe off their beaks!), thrives in a napkin of bark and sends shoots to the regions beneath; plays steady boarder to unwitting host, be it maple or elm, willow, thorn, poplar, or even the conifers; sometimes an oak. Grandchild of Eve, it is fond of an apple but shies at a pear. Long years ago when the Druids were powerful, scholarly, wise, oaks were the trees of the gods (so they deemed them) and all that they held were gifts of the gods to be worshipped and cherished as symbols of peace; and enmities died when the warriors met where the mistletoe hung. (Mistletoe found on an oak was a rarity; hence its appeal.)

Time works its changes and careless modernity gibes at the past. Man, imitative, and guided by precedent, slips on details; gathers the mistletoe anywhere handiest, has it shipped home; hangs it around in the house where, sans question, it later will prove osculatory larceny's saccharine quality can't be denied. (Oh, very well, madam! I'm merely remarking, "Stolen kisses are sweetest!") Christmas arrives and the Christmas trees flourish and burst into flower. Fruit follows flower in a luminous moment; candles are lit. Cedars and pines become fairy-like creatures in moonbeams arrayed.

Where there is happiness you will find evergreens all o'er the house. Where there are evergreens you should find happiness. That's fair enough! Anyhow, brother, where evergreens flourish the meaning is clear: Nature is wishing you the merriest Christmas and a Happy New Year.

WHO'S WHO Among the Authors in This Issue

ARCHIBALD RUTLEDGE (*The Hand, and God's Gleaners*) has long been familiar to the readers of *AMERICAN FORESTS*. Born at McClellansville, South Carolina, Mr. Rutledge was educated in Charleston and at Union College, from which he was graduated in 1904. Since then he has headed the English Department of the Mercersburg Academy. Mr. Rutledge, Poet Laureate of South Carolina, has for many years given the American public a true and vivid picture of the South. He has received worldwide acclaim as an educator and writer, and it is with real pleasure that we present, in this issue, not only one of his finest poetic expressions but also a splendid example of his beautiful prose writing.

MARY RUFFNER (*Colorado Trail Riders*) is state president of the Colorado League of Women Voters. A member of the pioneer expedition of the Trail Riders into Montana in 1933, she also pioneered in Colorado this year with the Maroon Bells-Snowmass expedition, where she was able to combine her love for horseback riding and for exploring.



Mary Ruffner

GRIFFITH ALEXANDER (*Evergreens*), who started his writing via the newspaper route, has been a reporter, columnist, and editorial writer. For more than twenty years he has lived in St. Mary's County, Maryland, and for the past eight years has been an amateur gardener and woodsman at Green Holly, which he calls "the loveliest spot on the Patuxent River."

A. DELL ROENSCH (*Desert Christmas Trees*) lives in Phoenix, Arizona, and writes from first hand experience of the gay and unusual Christmas trees of the Southwest.

GENEVIEVE MONSCH (*The Story of Mistletoe*), of Chicago, so pleasantly remembered for her holly story of last December, gives us here the fascinating story of mistletoe.

WILLIAM P. WHARTON (*Are the Elms Being Saved?*) is a director of The American Forestry Association. Always closely identified with movements for the conservation of our natural resources, Mr. Wharton is especially active in the attempt to save America's elms.

R. F. HAMMATT (*Reaping What the Winds Have Sown*) first entered the Forest Service in 1906. He is now assistant to the Chief Forester, and is stationed at Washington, D. C.

THE COVER—*Christmas Morning at Paradise Inn*—Photograph by Orville Borgersen.

Wreaths, boxes of Cut Evergreens and Roping, all carrying the fragrance of the forest

Baskets filled with the good things from the hills

CHRISTMAS DECORATIONS AND GIFT SUGGESTIONS

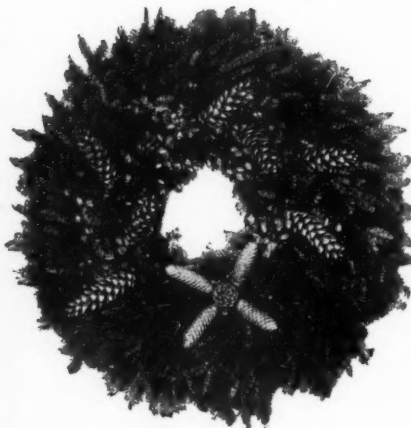
FROM THE GREEN MOUNTAINS OF VERMONT

BALSAM ROPING

By far the finest of all holiday roping for use indoors or out, is that made from Balsam. It does not shed its needles in warm rooms like spruce or hemlock, nor curl like laurel and holly. It fills the house with its fragrance and may be taken apart for filling pillows or fireplace burning after the festive season. Order early for home, store, church or school use. We make two grades.

Heavy hand-made roping 5 yards, \$3.00; 10 yards, \$5.00; 100 yards, \$40.00. Lighter grade, but well made, 5 yards, \$1.50; 10 yards, \$2.50; 100 yards, \$15.00.

For color variation, we can furnish Hemlock, White Pine, Arborvitae or Spruce at same price as light weight Balsam.



No. 5 Wreath



CHRISTMAS WREATHS

We have seven wreaths of different size and design—all made of splendid fragrant BALSAM and trimmed with various evergreen cones and with bright berries. This material we gather, painstakingly, after the natural shedding of needles has taken place.

No. 1—12-inch wreath with five cones and five sprays of red berries, \$1.00 each, 3 for \$2.50.

No. 2—15-inch wreath with six sprays of cones and six sprays of red berries, \$1.50 each, 3 for \$4.00.

No. 3—20-inch wreath with five large cones and five sprays of berries, \$2.00 each, 3 for \$5.00.

No. 4—20-inch wreath with continuous decoration of cones and berries, \$3.00 each, 3 for \$7.50.

No. 5—A large 26-inch wreath built on a frame for store or cemetery use. Decorated with cones, catkins and berries, \$6.00 each.

No. 6—The largest wreath we make. Like No. 5, only 30 inches in size. \$8.00 each.

No. 7—This 20-inch garland wreath is one of our loveliest. Large cones and sprays are used in a design at the bottom, a large red ribbon bow adorns the top. We offer this wreath with an electric candle and cord. \$4.00 each. Without cord or candle, \$2.50 each.

OLD-TIME CHRISTMAS BASKET

An attractive hand made basket of Ash Wood. It is 18 by 10 by 8½ inches, has double handles and a hinged cover. Just the basket for picnics and a dozen other uses and will last a lifetime. We have lined this basket with fragrant Balsam and have filled it with:

| | |
|-----------------------------------|---|
| 3 pounds of real bear paw popcorn | fresh-made Vermont Maple hearts |
| 2 pounds of Butternuts | 1 Half pint of delicious home-made Red Raspberry jam. |
| 1 Partridgeberry Bowl | |
| 2 Half pound boxes of | |

Here is an unusual and a most delightful gift. We know it will bring pleasure to whoever receives it, and recommend it unhesitatingly.

The Old-Time Christmas Basket is.....\$ 3.50

One dozen baskets..... 38.00

OTHER SUGGESTIONS

| | |
|--|--------|
| Fragrant Balsam Pillows..... | \$1.00 |
| Maple Hearts, ½ pound box..... | .50 |
| Maple Sugar, 1 lb. box cakes..... | .55 |
| White Pine Cones for fireplace, 2 bushel sack..... | 1.00 |

BASKET WREATH

An unusual little wreath, about 18 inches across, made and decorated to look like a balsam basket filled with berries and cones. The handle is wound with Balsam and trimmed with red ribbon. \$1.50 each, 3 for \$4.00.

CHRISTMAS CANDLESTICKS

Made of Balsam tips, red berries and cones on a sturdy frame. About nine inches across, furnished with 10-inch candles.

\$1.25 each, \$2.00 a pair.



PARTRIDGEBERRY BOWL

A round, glass bowl, approximately four inches in diameter, fitted with a tight glass cover. This bowl has been scientifically filled with Partridgeberries. The work has been so carefully done that they will continue to grow and will become increasingly attractive over a long period. The leaf of the Partridgeberry is evergreen, the berries a brilliant red.

We can ship these Bowls safely, anywhere. A pretty gift. The red ribbon matches the red of the Partridgeberry.

The Aiken Partridgeberry Bowl, each.....\$1.00

One dozen bowls..... 10.50

Our prices are f.o.b. Putney. Should you wish to send gifts to friends, we will prepay carrying charges and you can then remit the cost to us.

Please give full shipping instructions, where, when and how. SEND FOR OUR COMPLETE LIST—IT WILL INTEREST YOU.



THE AIKEN NURSERIES BOX H
PUTNEY, VERMONT

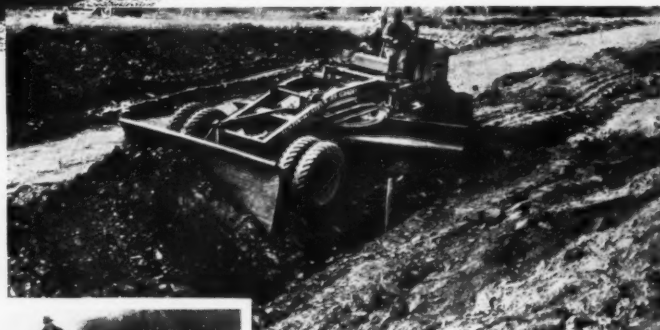
6 Reasons Why it's the '99' for '39



Digging and pulling ditches with the "99" . . . a job that formerly required a tractor and pull grader.



Up Pikes Peak (14,000 ft.) working hairpin turns without gouging or wasting by the blade and negotiating sharp curves without backing up.



Bulldozing rocks or removing landslides is all in the day's work for this versatile machine.



The "99" provides the increased traction required for fast, economical scarifying of compacted oil mat, clay or shale.



The "99" easily breaks out snow like this. Its 4-wheel drive assures traction and power so important where drifts are deep and the going is soft or slick. Five forward speeds assure best performance under varying conditions.



These six performance pictures tell the story of the Austin-Western "99" Motor Grader's fast-growing popularity in the Forest Service. They show how its 4-wheel drive and 4-wheel steer enable this one motor grader to handle a variety of jobs that formerly required several machines . . . with substantial economies assured on practically all construction and maintenance operations. Write today for proof and engineering details.

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